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Contributors

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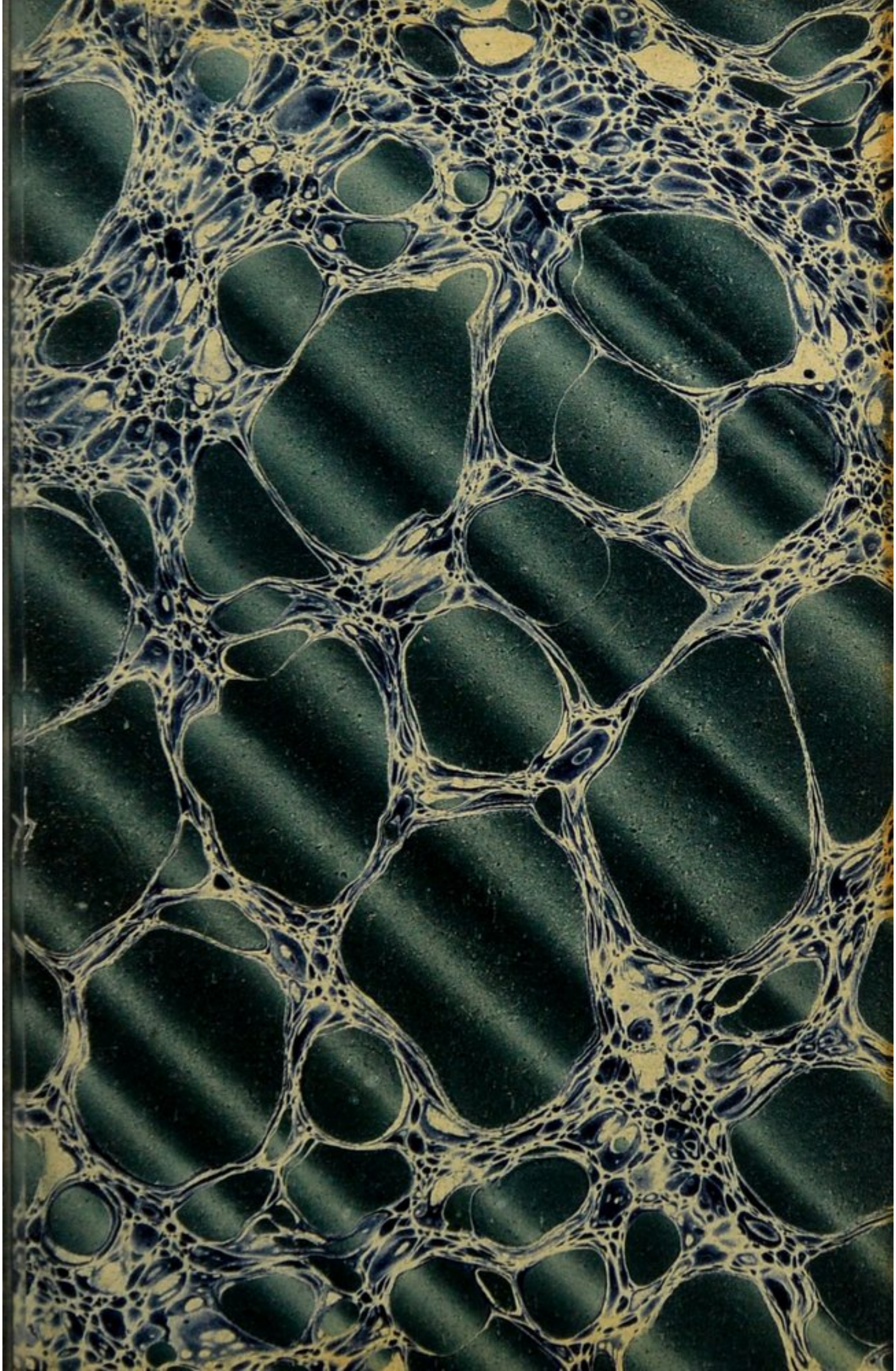

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To

Mr. William Chalmers.

Xmas. 1850.

Given by command of

Her Royal Highness

The Duchess of Kent.

Cooper

W. H. Brooke, A.R.H.A. del.

S. Bull, sculp.

The

SCIENTIFIC AND LITERARY

TREASURY:

A New and

Popular Encyclopædia

of

THE BELLES LETTRES:

Condensed in form, familiar in style, & copious in information:

Embracing an extensive range of subjects in

Literature, Science, and Art.

The whole surrounded with

Marginal Notes, containing concise Facts

with appropriate observations.

BY SAMUEL MAUNDER,

Author of "The Treasury of Knowledge," "Biographical Treasury," &c.

NEW EDITION.

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79727

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PATERNOSTER-ROW.

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PREFACE.

There are few tasks of more difficult accomplishment, than the one which an Author feels bound to undertake, when a performance which has engrossed much of his time, and to which he has probably directed his best energies, is about to be submitted to the public. Literary usuage appears, however, to have decided, that upon such an occasion, some prefatory observations are considered indispensable; but, while prompted by a natural desire to enter somewhat freely into the merits of that which has occupied his most earnest attention, the overwhelming apprehension of being thought egotistical, and the bare possibility of really becoming so, will often paralyze the Writer's well-intentioned efforts. In the present instance, I can truly say, that my incessant occupation from the hour I commenced this volume to the very eve of its publication, coupled as it has been with an anxious desire to render it worthy of public favour, have left me no time to consider what arguments would be most likely to fix the reader's attention to the following pages; in what terms I should entreat his kind indulgence; or upon what grounds I could venture to deprecate the severity of criticism.

May I be allowed to say, that I have endeavoured to produce a work, which — while I am fully sensible of its numerous imperfections — I trust, may be generally acceptable, and, I hope, extensively useful? Its design, though briefly, is not obscurely, stated in the title-page: and its contents, multifarious as they are, are so perceptible at a cursory glance, owing to the alphabetical arrangement, that it would be almost impertinent to trouble the reader with more than a mere reference to the general plan.

A wonderful change has of late years taken place in the means adopted for the diffusion of a taste for literature and science. The talents and attainments of eminent Professors, in every department of literature, in every branch of art, in every scientific pursuit, are now called into vigorous and united action; and it may indeed be truly said, that we live in an era when the youth of our country cannot fail to meet, in all directions, with advocates as sincere as they are disinterested, for their intellectual progress, their moral advancement, and for the grand result of these—their future happiness.

Some are labouring, with well-directed zeal, to establish literary and scientific institutions; others are cheerfully becoming the indefatigable instructors of imperfectly educated adults; and many, with an ardour and earnestness of purpose in the highest degree creditable to them as men of science and as citizens of the world, are unfolding the treasures of their well-stored minds to delighted audiences in the lecture-room.

It is evident that in a publication of this varied character, it would be absurd to lay claim to any great merit on the score of originality; for, although I have not unfrequently ventured to deviate from the beaten path, under an idea that certain subjects might be rendered more inviting to the desultory reader, without detracting aught from their real value, I believe that, in such instances, no unwarrantable liberties have been taken, no levity indulged in where the subject required a becoming gravity, and no attempt made to render an article merely amusing, which ought to be strictly didactic or logically exact. In short, it has been my constant aim, as far as the limits of this publication would permit, to collect into different foci the result of the observations I have made, and to reflect the scintillations of light from every quarter within the compass of my circumscribed vision.

It may, at first sight, appear that a great disparity exists between the length of the different articles. It must be remembered, however, that many are merely definitions of technical terms, which could be better and more clearly expressed in a brief sentence or two, than in half a column. The magnitude or intricacy of others demanded a comparatively long discussion; and there are not a few which, either from their novelty or their present popularity, would be considered as too slightly noticed, if the same process of condensation had been used in regard to them, as was applied to others, of equal importance perhaps, but more generally known, or better understood.

I am well aware how natural it is for a person who is engaged in any particular study, or who has a predilection for some given topic, to be desirous of making himself as fully acquainted with it as possible, and to feel, perhaps, a degree of disappointment, where another person, with different views and pursuits, would be abundantly satisfied; but the candid reader, I am persuaded, will grant, that a *complete system* of any science can hardly be expected in a work whose highest excellence must, after all, be a judicious brevity; and that if *principles* be clearly stated, they will often suffice till the details can be sought in works especially adapted for their elucidation. My great object has been to produce a book that should meet the wants and

wishes of a very large and most respectable class of readers, whose opportunities of studying the ponderous tomes of science are as unfrequent as their aspirations after knowledge are ardent. To the literati, I know it can present few attractions; to the man of science it presumes not to offer anything new. But there may be times, when even these may find it convenient to consult a hand-book of reference, so portable and yet so full, if it be merely to refresh the memory on some neglected or forgotten theme.

I consider it unnecessary to enumerate the various branches of literature which are comprised in the following pages, my object having been to concentrate therein, as far as was possible, the whole of the liberal arts—briefly, it is true, but with as much perspicuity, and in language as simple and familiar as I could command; neither do I deem it at all important to name the numerous works which I have found it necessary to consult. It will be seen, throughout the work, that wherever I have been indebted for any material information, I have not failed to acknowledge the source whence it was derived. But although it may be needless to dilate on the general nature of the contents, for the reasons before given, it is essential to notice that the *facts in science, &c. which surround the pages*, have, with few exceptions, a direct reference to some subject treated on in that particular page, or contain a further illustration of it. These marginal observations have occupied no inconsiderable time; and I hope they will not be less valuable than the moral precepts and proverbs have been found which encompass the pages of "The Treasury of Knowledge" and "The Biographical Treasury."

And now, in bringing these remarks to a close, it may not be improper to observe, that, although I have studiously avoided the introduction of any matter foreign to the immediate subject under consideration, I have not been unmindful of the connection that exists between the natural and the moral world, nor have I neglected any suitable opportunity of enforcing sound principles in ethics, and that willing obedience to the laws, without which science is acquired in vain, and learning often proves a curse. The philosophic youth

"To Nature's voice attends, from month to month,
And day to day, through the revolving year;
Admiring, sees her in her every shape;
Feels all her sweet emotions at his heart;
While Truth, divinely breaking on his mind,
Elates his being, and unfolds his powers."—Thomson.

Dec. 15th, 1840. S. M.

THE SCIENTIFIC AND LITERARY TREASURY.

A IS the first letter, and the first vowel, of the alphabet in every known language, except the Ethiopic; and is used either as a word, an abbreviation, or a sign. If pronounced *open*, as in FATHER, it is the simplest and easiest of all sounds; the first, in fact, uttered by human beings in their most infantile state, serving to express many and even opposite emotions, according to the mode in which it is uttered. A has therefore, perhaps, had the first place in the alphabet assigned to it. In the English language it has four different sounds: the *broad* sound, as in FALL; the *open*, as in FATHER; the *slender*, or *close*, as in FACE; and the *short* sound, as in FAT. Most of the other modern languages, as French, Italian, German, &c. have only the *open*, or Italian *a*, pronounced short or long.——Among the Greeks and Romans, A was used as an arithmetical sign: by the former for 1; by the latter for 500; or with a stroke over it for 5,000. The Romans also very extensively used it as an abbreviation; which practice we still retain, as A.M., *artium magister*; A.D. *anno domini*, &c.——A, *a*, or *aa*, in medical prescriptions, denote *ana*, or equal parts of each.——A, in music, is the nominal of the sixth note in the diatonic scale; in algebra it denotes a known quantity; in logic, an universal affirmative proposition; in heraldry, the *dexter chief*, or chief point in an escutcheon; and it is the first of the dominical letters in the calendar.

AA'M, or HAA'M, a Dutch liquid measure, containing about 36 English gallons.

AAN'CHE, a name sometimes given to wind instruments with reeds or tongues, as the clarionet, hautboy, &c.

AA'NES, in music, the tones and modes of the modern Greeks.

AARD'VARK, or EARTH PIG, an animal common in Southern Africa, which feeds entirely upon ants, and is remarkable for the facility with which he burrows deep in the earth to avoid his pursuers, and for the instinct he displays in securing his insect prey.

AAVO'RA, a species of palm-tree.

AB, in the Hebrew calendar, the 11th month of the civil year, and the 5th of the ecclesiastical. In the Syriac calendar, it is the last of the summer months. The eastern Christians called the first day of this month *Suum Miriam*, the fast of Mary, and the 15th, on which day the fast ended, *Fathr-Miriam*.

A'BAB, a sort of militia among the Turks.

AB'ACA, a plant, of which there are two species, growing in the Philippine Islands; the *white* producing lint, of which fine linen is manufactured; and the *grey*, hemp, which is made into cordage.

ABACINA'RE, a punishment, described by writers of the middle ages, wherein the criminal was blinded, by holding red-hot irons before his eyes.

ABACIS'CUS, in ancient architecture, the square compartments of Mosaic pavements.

AB'ACOT, a cap of state worn in the form of a double crown, used by the ancient kings of England.

ABAC'TUS, a term used by ancient physicians for a miscarriage.

AB'ACUS, a sort of cupboard or buffet, used by the Romans, and which in times of great luxury was plated with gold.——ABACUS, in architecture, the superior member of the capital of a column, to which it serves as a kind of crown. It was originally intended to represent a square tile laid over a basket; and it still retains its original form in the Tuscan, Doric, and Ionic orders; but in the Corinthian and Composite, its four sides or faces are arched inwards, having a rose or some other ornament in the middle.——ABACUS, among ancient mathematicians, was a table strewed over with dust, or sand, on which they drew their figures.——ABACUS, in arithmetic, an ancient instrument for facilitating operations by means of counters. Its form is various; but that chiefly used in Europe is made by drawing parallel lines distant from each other at least twice the diameter of a counter; which placed on the lowest line, signifies 1; on the second, 10; on the third, 100; on the fourth, 1000; and so on. In the intermediate spaces, the same counters are estimated at one half of the value of the line immediately superior.——There

were also other inventions similarly denominated; viz. ABACUS PYTHAGORICUS, a multiplication table, invented by Pythagoras; and ABACUS LOGISTICUS, a rectangled triangle, whose sides, forming the right angle, contain all the numbers from 1 to 60, and its area the products of each two of the opposite numbers. This is also called a *canon of sexagesimals*.

In justice to the present advanced state of science, and at the same time, as a sincere though feeble tribute to the genius of one of the most scientific men of the age, we are bound to notice in this place a most extraordinary automatic invention by Mr. Babbage, (infinitely exceeding the powers of the abacus of ancient arithmeticians,) the object of which is to compute and print the most difficult astronomical or navigation tables, &c., such as could not otherwise be effected without immense intellectual and manual labour. We hear that the machine is not yet quite completed, but the inventor asserts, and his assertions are verified by Sir David Brewster and other eminent men, that not only can the highest operations of arithmetic be performed by this stupendous engine, but it is capable of correcting its own errors, and, when corrected, it can print off the results, independent of human aid! By this it appears that the machine consists of two parts, a calculating, and a printing part, both of which are absolutely necessary to its entire perfection. In explaining his mode of accomplishing such great objects, the inventor observes, "that nearly all tables of numbers which follow any law, however complicated, may be formed, to a greater or less extent, solely by the proper arrangement of the successive addition and subtraction of numbers befitting each table;" and he then proceeds to shew, by a series of tables and explanations, the theory of his art, as well as the mechanical execution required for its performance. The limits of our work, however, are inadequate to give a fair illustration of so skilful a contrivance, but it may be sufficient to lead the enquiring mind to farther investigation. [We may here remark, *en passant*, that it is to this end that a book of reference, so extensive in its aim as the present, must of necessity be constantly directed. Wherever, by reason of its brevity, or the magnitude of the subject on which it treats, it cannot enter into the necessary details, it may still excite a laudable curiosity for more elaborate information, and thereby lead to its acquirement.]

ABA'TEMENT, in law, signifies the rejecting a suit, on account of some fault either in the matter or proceeding.——ABATEMENT, in heraldry, something added to a coat of arms, in order to lessen its true dignity, and point out some imperfection or stain in the character of the person who bears it.——In commerce, ABATEMENT means a discount in the price of commodities for money advanced by the buyer, or some other cause.

AB'ATIS, trees cut down and laid with their branches turned towards the enemy, so as to form a defence for troops stationed behind them.

ABA'TOR, in law, one who enters into a house or lands, void by the death of the last possessor, before the true heir.

AB'ATURES, a term, with huntsmen, to denote the sprigs or grass thrown down by the stag in passing by.

ABB, or ABB-WOOL, a term used by clothiers for the *warp*.

AB'BE, a French word, literally meaning an *abbot*; but the character generally spoken of under the name of abbé has long ceased to be of any official nature. Before the Revolution, the term *abbé* designated a very numerous body of persons, who had little or no connexion with the church, except the apparent one which they derived from this title, but who followed a course of theological study, in hopes that the king would confer on them a real abbey, that is, a part of the revenues of a monastery. They were engaged in every kind of literary occupation, and exerted an important influence on the character of the country; nor was there scarcely a family of distinction in France wherein an abbé was not found in the capacity of a familiar friend and spiritual adviser.

AB'BESS, the superior of a nunnery, or other religious community of women. She has the same authority as an abbot, but cannot exercise any of the spiritual functions.

AB'BEY, a religious house governed by a superior, under the title of an abbot or abbess. Abbeys differ in nothing from priories, except that the latter are governed by priors, instead of abbots. The abbeys of England, at their dissolution under Henry VIII., became lay-sees; when no less than 190 were dissolved, the yearly revenue of which has been estimated at 2,853,000*l*.; an almost incredible sum, considering the value of money in those days. At present, an abbey is, in general, the cathedral or episcopal church of the see or diocese in which it stands.

AB'BOT, was originally the name of every aged monk; but, since the 8th century, it denotes the head of a monastery. In most countries they held a rank next to that of bishop, and had votes in the ecclesiastical councils. At present they are chiefly distinguished into regular and commendatory; the former being real monks or religious, and the latter only seculars or lay-men. These last, notwithstanding that the term *commendam* seems to signify the contrary, have the perpetual enjoyment of the fruits of their abbeys. Anciently the ceremony of creating an abbot consisted in clothing him with the habit called *cuculla*, or cowl: putting the pastoral staff into his hand, and the shoes called *pedales*, on his feet; but at present, it is only a simple benediction.——It was because certain abbots and priors in England, in right of their monasteries, held lands of the crown, for which they owed military service, that they obtained the title of LORDS, and were summoned, as barons, to parliament; and

from this custom the bishops, in modern times, have the same honour.

ABBREVIA'TION, a contracted manner of writing words so as to retain only the initial letters. Such abbreviations were in common use with the Romans, as they are with us, to save time and space. [For a complete list of those most necessary to be known at present, we refer to "*The Treasury of Knowledge.*"]——Abbreviation, a mathematical term, given to the process by which a fraction is reduced to lower terms.——Abbreviation, (in music.) One dash, through the stem of a minim or crotchet, or under a semibreve, converts it into as many quavers as it is equal to in time: two dashes into semiquavers; three into demisemiquavers; and so on. When minims are connected together like quavers, semiquavers, &c., they are to be repeated as many times as if they were really such notes. An oblique dash through the 2nd, 3rd, and 4th lines after an arpeggio, signifies that it is to be repeated; for quavers, a single dash being used; for semiquavers, a double one; and so on.

ABBRE'VIATORS, officers who assist the vice-chancellor in drawing up the Pope's briefs, and reducing petitions into proper form, to be converted into bulls.

ABDICA'TION, properly speaking, is a *voluntary* resignation of a dignity, particularly a regal one; and if he in whose favour the abdication was made, dies, or declines the offered dignity, the right of the abdicated prince is reverted. Involuntary resignations are, however, also termed *abdications*, as in the case of Napoleon's abdication at Fontainbleau.

ABDITA'RIUM, or ABDITO'RUM, in archæology, a secret place for hiding or preserving valuables.

ABDO'MEN, that part of the body usually called the belly. It contains the viscera more or less immediately connected with digestion, and the kidneys which secrete the urine. By anatomists, the abdomen is divided into three anterior regions, viz. the epigastric, or upper one; the umbilical, or middle one; and the hypogastric, or lower one: there is also one posterior region, called *regio lumbaris*.

ABDOMINA'LES, a numerous order of fishes, which have the ventral fins placed behind the pectoral, in the abdomen; as salmon, trout, herrings, carp, sprats, &c. It includes the greatest number of the fresh-water species.

ABDUCTION, the crime of unlawfully taking away, either by force or fraud and persuasion, the person of another, whether of child, wife, ward, heiress, or woman generally.——The word *abduction* is also used in surgery, to express a peculiar fracture of the bones.

ABDUC'TOR, in anatomy, a name given to several muscles on account of their serving to open or draw backwards the parts into which they are inserted.

ABE'LIANS, or A'BELITES, a Christian sect which sprang from the Gnostics. They abstained from matrimony, but adopted the children of others, and brought them up in their own principles.

ABELMOS'CHUS, the seed of an Egyptian plant, which resembles musk in its perfume, and is used by the Arabians in their coffee.

ABERRA'TION, in astronomy, an apparent motion of the fixed stars, occasioned by the progressive motion of light.—— Aberration, in optics, the deviation of the rays of light, when reflected by a lens or speculum, whereby they are prevented from meeting in the same point. Aberrations are of two kinds, one arising from the figure of the reflecting body, the other from the unequal refrangibility of the rays themselves.

ABEY'ANCE, in law, the expectancy of an estate or possession: thus, if lands be leased from one person for life, with reversion to another for years, the latter estate is in abeyance till the death of the lessee. It is a fixed principle of law, that the fee-simple of all lands is in somebody, or else in abeyance.

ABJURA'TION, a forswearing, or renouncing by oath: in the old law it signified a sworn banishment, or an oath taken to forsake the realm for ever. In its modern, and now more usual signification, it extends to persons, and doctrines, as well as places.

ABLACTA'TION, a sort of ingrafting trees, by leaving the graft on its proper stock, until it be fully incorporated with the new stock. Also, the weaning a child from the breast.

ABLEC'TI, in ancient Rome, a chosen band of foreign troops, selected from the *extraordinarii sociorum*.

ABLEG'MINA, in Roman antiquity, choice parts of the entrails of victims, called also *proficiæ*, *porriciæ*, *prosecta*, and *prosegmina*. The ablegmina were sprinkled with flour, and burnt on the altar; the priests pouring some wine on them.

AB'LUENTS, diluting medicines, or such as dissolve and carry off impurities from any part of the body.

ABLU'TION, a religious ceremony of washing the body, still used by the Turks and Mahomedans. It originated in the obvious necessity of practising cleanliness, for the prevention of diseases in hot countries; for which purpose it was made a religious rite; and by an easy transition of idea, the purity of the body was made to typify the purity of the soul: an idea the more rational, as it is perhaps physically certain that outward wretchedness debases the inward mind.——Ablution, among physicians, is used either for washing the external parts of the body by baths; or deterging the bowels by thin diluting fluids.

ABOL'LA, a kind of military garment worn by the Greek and Roman soldiers.

ABOMA'SUS, the paunch, or fourth stomach of ruminating animals, in which the process of digestion is completed. Ruminating animals, or such as chew the cud, have four stomachs; the first, is called

PERSONS WHO DERIVED THEIR INCOMES FROM IRELAND, AND DID NOT RESIDE THERE SIX MONTHS, WERE FORMERLY TAXED TWENTY PER CENT.

venter; the second, *reticulum;* the third, *omasus;* and the fourth, *abomasus.* It is in the abomasus of calves and lambs that the runnet is found, used for curdling milk.

ABORI''GENES, a name given to the original or first inhabitants of any country; but more particularly used for the ancient inhabitants of Latium, when Æneas with his Trojans came into Italy.

ABOR'TION, in a *figurative* sense, any production that does not come to maturity, or any design or project which fails before it is properly matured.——In medicine, it means a miscarriage, or the fœtus brought forth before it is perfectly formed.

ABOUT', the situation of a ship immediately after she has tacked.——About ship, an order to the crew to prepare for tacking.

AB'RACADAB'RA, a term of incantation, formerly used as a spell or charm, and worn about the neck as an amulet against several diseases. In order to give it the more virtue, it was to be written as many times as the word contains letters, omitting always the last letter of the former, and so forming a triangle. But charms and incantations have had their day; and *abracadabra,* if used at all, now serves as a word of jest, like *hocus pocus,* and other unmeaning gibberish.

ABRA'SION, in medicine, the corroding or wearing of the intestines, by sharp and acrimonious humours, or medicines.

ABRAX'AS, or ABRASAX', in church-history, a mystical term expressing the supreme God, under whom the Basilidians supposed 365 dependent deities. It was the principle of the Gnostic hierarchy.——Abraxas, or Abrasax Stones, are very numerous, and represent the human body, with the head of a cock, and the feet of a reptile. The name of *Abrasax stone* is, in modern times, applied to a variety of gems that exhibit enigmatical compositions, but have not the true characteristics of the Basilidians.

AB'RAUM, a kind of red clay used by cabinet-makers to deepen the colour of new mahogany.

ABREAST', side by side, or opposite to; a sea term, applied to two or more ships ranged together.——Abreast of a place, means directly opposite to it.

ABREUVOIR', a French word for a watering-place, or any place dug for retaining water, as in camps. In architecture, the interstices between two stones to be filled up with mortar or cement are called abreuvoirs.

ABRIDG'MENT, the bringing the contents of a book within a short compass. The perfection of an abridgment consists in taking only what is material and substantial, and rejecting all superfluities, whether of sentiment or style: in which light, abridgments must be allowed to be eminently serviceable to all whose occupations prevent them from devoting much time to literary pursuits.——Abridgment, in law, the shortening a count, or declaration: thus, in assize, a man is said to abridge his plaint, and a woman her demand in an action of dower, if any land is put therein, which is not in the tenure of the defendant; for on a plea of non-tenure, in abatement of the writ, the plaintiff may leave out those lands, and pray that the tenant may answer to the remainder.

ABRO'TANUM, in botany, a species of plant arranged under the genus *Artemisia;* called also Southernwood.

AB'SCESS, an inflammatory tumour containing purulent matter.

ABSCIS'SA, the part of any diameter or axis of a curve line, cut off by a perpendicular line, called the ordinate.

ABSCIS'SION, in rhetoric, a figure of speech, whereby the speaker stops short in the middle of his discourse, and leaves his hearers to draw their own inferences from the facts he has stated.——In astronomy, the term abscission denotes the cutting off the light of the first of three planets when the third comes in conjunction with the middle one.

ABSENTEE', a word of modern times, applied to land-owners and capitalists, who expend their incomes in another country.

ABSOLU'TION, a religious ceremony of the church of Rome, by which the priests assume the power to forgive sins. In the ancient Christian church, absolution was a judicial act, by which the priest, in the name of the community, invoking the favour of God, announced to the penitent his remission from ecclesiastical punishment, and readmission into the bosom of the church. The fathers of the Protestant church maintain, that God alone can forgive and deliver from sin; that a judicial power over the souls of Christians is conferred neither on priests nor teachers.

AB'SOLUTISM, in matters of theology, a doctrine charged on the Calvinists; whereby God is supposed to act from mere pleasure, in regard to the salvation of mankind. Absolutism is the grand obstacle to an union between the Lutherans and Calvinists.

ABSORP'TION, the process in animated nature, by which the digested aliments or substances that support the body are carried into the blood. In chemistry, absorption means the conversion of a gaseous fluid into a liquid or solid, on being united with some other solid.

ABSORB'ENTS, calcarious earths, or other medicines which soak up the redundant humours of the body.

ABSORB'ENT VESSELS, are those which absorb the digested aliment, and carry the new matter, called *chyle,* into the system. They are either *lacteal,* or *lymphatic.* The chyle being white like milk, gives the name *lacteal* or milky to the vessels through which it is conveyed. The substance contained in the lymphatic vessels is the old and worn-out particles of the system, and such others as may have been received in it from the surfaces of the body: it is perfectly transparent, on which account it is called *lymph,* giving the name *lymphatic* to its vessels.——The term Absorbent Vessels is also used by some

THE TAX ON IRISH ABSENTEES WAS LAID ON AT THE BEGINNING, AND TAKEN OFF ABOUT THE MIDDLE OF THE EIGHTEENTH CENTURY.

naturalists for the fibres of the roots of plants, which draw nourishment from the surrounding earth.

ABSTE'MII, a name given to persons who could not partake of the sacrament from their natural aversion to wine.

ABSTER'GENTS, medicines proper for cleansing the body from concretions and other impurities, not to be effected by simple abluents. Abstergents are of a saponaceous nature, and therefore very different from mere abluents.

AB'STINENCE, the abstaining or refraining from what is either useful, agreeable, or pernicious; but more especially, from eating and drinking. In the Romish church there are "days of abstinence," as well as "fast days;" the former importing a partial, and the latter, almost a total abstinence from food.

AB'STINENTS, a sect of Christians who appeared in France about the end of the third century, professing celibacy, and abstinence from particular kinds of food, &c. ——The most rigid ABSTINENTS of the present day, are those who, under the whimsical denomination of *tee-totallers*, (TEA-totallers?) profess to abstain wholly from the use of all liquors stronger than tea or coffee. In the United States, according to a calculation which has appeared, nearly half-a-million belong to the different "temperance societies;" and even their disciples in England, on a general muster-day, are able to make a display of forces sufficiently numerous, we should think, to alarm the proprietors and keepers of those temples of sin called gin-palaces, which rear their unblushing heads in every street in the metropolis, presenting to the mind, when viewed in contrast with the squalid and filthy wretches who support them, a truly appalling picture of moral, mental, and physical degradation. Whatever means may be found most effectual for banishing the detestable vice of drunkenness from civilized life, should most assuredly be promoted, whether it be tee-totalism, the stocks, or the whipping-post; yet we cannot help feeling that there is something bordering upon the ludicrous in these promiscuous assemblages, where "reformed" drunkards, *i. e.* emaciated old sots, either affecting abstemiousness or having spent all their substance in bacchanalian orgies, set up for apostles of temperance, and descant on their former bibulous propensities, in order that blushing maidens and innocent youths may have an adequate idea of the enormity of drinking a glass of home-made wine. It should, however be observed that, as among professing Christians some are less strict than others, so among the advocates of the "temperance system," some give much greater latitude than others to the meaning of the term; nay, there are those, we understand, who, so far from insisting on the necessity of tee-totalism, regard it as a wishy-washy doctrine, and are willing to allow their converts a generous glass whenever the wants of the body require one. There appears to be a wise liberality in this, which induces us to hope their efforts may eventually succeed.

AB'STRACT, a concise but general view, or analysis, of some large work; in which sense it differs from an *abridgment* only as being shorter, and its entering less minutely into particulars; and from an *extract*, as this last is only a particular view of some part or passage of it.

ABSTRAC'TION, in logic, that operation of the mind whereby it forms abstract ideas. The faculty of abstraction stands directly opposite to that of compounding. By composition we consider those things together, which, in reality, are not joined together in any one existence. And by abstraction, we consider those things separately and apart, which, in reality do not exist apart. In its passive sense it implies occupation with one's-self to the exclusion of other objects.——ABSTRACTION, in chemistry, the process of drawing off by distillation any part of a compound, and returning it again to the residue to be redistilled.

ABSTRACTI''TIOUS, an epithet for the native spirits of aromatic vegetables, in distinction from those produced by fermentation.

ABUT'MENTS, the extremities of any body adjoining another, as the extremities of a bridge resting on the banks or sides of a river. Also the junctions or meetings of two pieces of timber.

ABYSS', any deep place that is supposed to be bottomless, as the deepest or unfathomable parts of the sea.

ACA'CIA, a beautiful shrub, one of the species of which bears rose-coloured flowers.——In the materia medica, acacia is the inspissated juice of the pods of the *mimosa Nilotica* of Linnæus.

ACÆ'NA, a genus of curious evergreen herbaceous exotics, chiefly from South America and New Holland.

ACADEM'ICS, certain philosophers who followed the doctrine of Socrates and Plato, as to the uncertainty of knowledge and the incomprehensibility of truth. Academic, in this sense amounts to much the same with Platonist; the difference between them being only in point of time. They who embraced the system of Plato, among the ancients, were called Academici; whereas those who did the same since the restoration of learning, have assumed the denomination of Platonists.

ACAD'EMY, in Grecian antiquity, a large villa in one of the suburbs of Athens, where the sect of philosophers called Academics held their assemblies. It took its name from Academus, a celebrated Athenian, who resided there, and became celebrated from its being the place in which Plato taught philosophy.——ACADEMY, in the modern acceptation, is a society of persons united for the pursuit of some objects of study and application, as the Royal Academy of Arts of London, and the Royal Academy of Sciences of Berlin. The first academy of science, in modern times, was established at Naples, by Baptista Porta, in 1560.

ACANTHOPTERYGIOUS IS THE TERM APPLIED TO THOSE FISHES WHICH HAVE HARD, BONY, AND PRICKLY BACK FINS.

ACAL'YPHA, a genus of exotic shrubs, natives of North and South America: the calyx of the male flowers consists of four small, roundish, concave, and equal petals, but no corolla; in the female flower the calyx is composed of three leaves, and no corolla.

ACALEP'TÆ (Sea Nettles), third class of Cuvier's *Zoophites*. The free species (*acaleptæ liberæ*), float on the sea. The hydrostatic (*acaleptæ hydrostaticæ*), are so named from the air bladders or vessels by which means they suspend themselves in the water.

ACANA'CEÆ, a class of plants which are prickly, and bear their flowers and seeds on a kind of head.

ACAN'THA, a name given to the prickles of thorny plants.——ACANTHA is also used by zoologists for the spines of certain fishes, as those of the *echinus marinus*, &c.

ACANTHA'CEOUS, an epithet given to all the plants of the thistle kind.

ACAN'THINE, among the ancients, something belonging to, or resembling the herb acanthus: hence we read of acanthine garments, acanthine woods, &c.

ACAN'THOPIS, a genus of venomous serpents, classed by Cuvier with the vipers, but differing from them in many essential characters. They are natives of New Holland, where they live in holes at the roots of trees. Their name is derived from the tail, which is terminated by a little spur.

ACANTHOPTERY'GII, one of the divisions in the natural order of fishes which Cuvier has established. Its name is suggested by its spinous fins.

ACANTHOS'CELIS, a genus of insects. Order, *coleoptera*; family, *scarabidæ*.

ACANTHOCI'NUS, a genus of insects. Order, *coleoptera*; family, *cerambycidæ*.

ACAN'THURUS (Thorn-tailed or Lancet Fish), a genus of fishes; ninth family of Cuvier's order, with spinous fins; found in the West Indian Seas, and much relished as food.

ACAN'THUS, in architecture, an ornament representing the leaves of the acanthus, or herb bear's-breech; principally employed in the Corinthian and Composite capitals.

ACAN'ZII, Turkish light-horse, the avant-guard of the Grand Seignor's army.

ACAS'TA, a genus of shells found in sponge, and never affixed to hard bodies.

A'CARUS, in zoology, a numerous genus of insects, comprehending the vermin which infest several animals, and mites in general.

ACAT'ALEPSY (*acatalepsia*), among ancient philosophers, the impossibility of comprehending something; uncertainty in science.

ACA'TERY, an officer of the king's household, designed to be a check between the clerks of the kitchen and the purveyors.

ACATHOL'ICI, the name by which Protestants are distinguished in some Catholic countries, as a term less objectionable than heretics.

ACA'TIUM, in antiquity, a kind of boat or pinnace used in military affairs. The acatium was a species of the *naves actuariæ*.

ACAU'LOSE, or ACAU'LOUS, among botanists, a term used for such plants as have no stem.

ACCA'LIA, in Roman antiquity, solemn festivals held in honour of Acca Laurentia, the nurse of Romulus: they were also called *Laurentalia*.

ACCAPITA'RE, in our old law books, the act of becoming a vassal, or paying homage to some lord. Hence ACCAPITUM signified the money paid by a vassal upon such an occasion.

ACCELERA'TION, in mechanics, the increase of velocity in a moving body. Accelerated motion is that which continually receives fresh accessions of velocity, and is either equally or unequally accelerated. The word is particularly applied to falling bodies tending towards the centre of the earth by the force of gravity.——ACCELERATING FORCE, being a sort of centripetal force, is expressed by that velocity, generated in a given time, with which bodies (considered as physical points) move towards the central body attracting them by its absolute force. This accelerating force is greater or less, according to the distance of the centre of the force, in a reciprocal duplicate proportion. The word ACCELERATION, is also used astronomically, and is applied to the moon, the planets, and fixed stars.

ACCENDEN'TES, or ACCENSO'RES, in the church of Rome, an inferior rank of ministers, whose business it is to light, snuff, and trim the candles and tapers.

ACCEN'DONES, in Roman antiquity, officers in the gladiatorial schools, who excited and animated the combatants during the engagement.

ACCEN'SI, in Roman antiquity, certain supernumerary soldiers, designed to supply the place of those who should be killed, or anywise disabled.——ACCENSI also denoted a kind of inferior officers, appointed to attend the Roman magistrates.

AC'CENT; a modification of the voice in pronouncing certain words or syllables: also, the marks on the words or syllables; as, the acute accent, marked thus (′), the grave accent thus (`) the circumflex thus (^). This is called grammatical accent, but there is also a rhetorical accent or emphasis, which is designed to give to a sentence distinctness and clearness. In a sentence, therefore, the stress is laid on the most important word, and in a word on the most important syllable. When the accent falls on a vowel, that vowel has its long sound, as in *po'rous*; but when it falls on a consonant, the preceding vowel is short, as in *pot'ter*. Accents also not only give a pleasing variety and beauty to the modulation of the voice, but often serve to ascertain the true meaning of the word.——In music, accent denotes a certain modulation or warbling of the sounds, to express passions, either naturally by the voice, or artificially by instruments. Every

THE ACCELERATION OF A PLANET, IS THE INCREASE OF ITS REAL DIURNAL MOTION, ABOVE ITS MEAN DIURNAL MOTION.

MANY OF THE MINERAL ACIDS ARE FOUND IN GREAT ABUNDANCE IN NATURE, THOUGH GENERALLY COMBINED WITH OTHER SUBSTANCES.

IN ACHROMATIC TELESCOPES, THE COLOURS OF REFRACTION ARE CORRECTED BY COMBINING GLASS LENSES OF DIFFERENT DISPERSIVE POWERS.

bar or measure is divided into the accented and unaccented parts; the former being the principal, on which the spirit of the music depends.——In mathematics, the accent is used to avoid the confusion of using too many letters in an algebraical problem.

ACCEN'TOR, a genus of birds which feed both on insects and seed; as the common hedge sparrow.

ACCEP'TANCE, in commerce, is when a man subscribes, signs, and makes himself a debtor for the sum contained in a bill of exchange, or other obligation, drawn upon, or addressed to him; which is done by his writing the word "Accepted" on it, and signing his name.

ACCEP'TOR, the person who accepts a bill of exchange by signing it, and thereby becoming bound to pay its contents.

ACCEPTILA'TION, among civilians, signifies an acquittance given by a creditor to a debtor, without receiving any money.

AC'CESS, in a general sense, denotes the approach of one thing towards another; but it is more proper to say, the approach of bodies, the appulse of the planets, &c.——Access, or Accession, in medicine, is used to denote the beginning of a paroxysm, or a fit of some periodical disease.

AC'CESSARY, in law, a person who aids in the commission of some felonious action. There are two kinds of accessaries, *viz.* before the fact, and after it. The first is he who commands and procures another to commit an offence; who, though he be absent when it is committed, is now regarded as much a principal as the actual offender. The accessary after the fact is one who receives, comforts, or assists the offender, knowing him to be such. In the highest crimes, as high treason, &c. and the lowest, as riots, forcible entries, &c. there are no accessaries, but all concerned are principals.

ACCIACATU'RA, in music, a sweeping of the chords of the pianoforte, and dropping sprinkled notes usual in accompaniments.

AC'CIDENS, or per accidens, a term applied to the operations of natural bodies, in distinction from *per se;* thus fire is said to burn *per se,* but a heated iron *per accidens.*

AC'CIDENCE, a display of the variations of words according to their government or sense.

AC'CIDENT, that which belongs accidentally, not essentially, to a thing, as sweetness, softness, &c.——Accidental, in heraldry, an additional mark in a coat of arms, which may be either omitted or retained, without altering its character.

ACCIDEN'TAL, in philosophy, a term applied to effects which result from causes occurring by accident.—— Accidental point, in perspective, that point in the horizontal line, where all lines parallel among themselves meet the perspective plane. Accidental colours depend on the affections of the eye in contradistinction to light itself.

ACCIPI'TRES, the first order of birds, including four genera of birds of prey, whose distinguishing characteristics are, that they have hooked bills, strong legs, and sharp claws.

ACCLAMA'TION, in Roman antiquity, a shout raised by the people, to testify their applause, or approbation of their princes, generals, &c. In ages when people were more accustomed to give full utterance to their feelings, acclamations were very common, whenever a mass of people was influenced by one common feeling. We find, therefore, acclamations in theatres, senates, ecclesiastical meetings, elections, at nuptials, triumphs, &c. In the early times of Christianity, the bishops were elected by acclamation. The first German emperors were elected in the same way; and at the present day, wherever the forms of civilized life are least regarded, approbation or disapprobation of proposed public measures is shown by acclamations of the assembled multitude.

AC'COLA, among the Romans, signified a person who lived near some place; in which sense it differed from *incola,* the inhabitant of such a place.

ACCOLA'DE, the ancient ceremony of conferring knighthood, by the king's laying his arms about the young knight's neck, and embracing him. This familiar expression of regard appears to have been exchanged for the more stately act of touching, or gently striking, with the royal sword, the neck of the kneeling knight. The present ceremony of conferring the honour of knighthood is evidently derived from it.

ACCOM'PANIMENT, an instrumental part added to a musical composition by way of embellishment, and in order to support the principal melody. When the piece may be performed with or without the accompaniment at pleasure, it is called *accompaniment ad libitum;* but when it is indispensable, *accompaniment obligato.*

ACCOM'PLICE, in law, a person who is privy to, or aiding in, the perpetration of some crime.

ACCOM'PLISHMENT, in a general sense, denotes the perfecting, or entirely finishing and completing any matter or thing; but it more expressly describes the acquirement of some branch of learning, useful art, or elegant amusement.——Accomplishment is also particularly used for the fulfilment of a prophecy; in which sense, we read of a literal accomplishment, a mystical accomplishment, &c.

ACCORDATU'RA, an Italian word, to express the tuning of an instrument.

ACCOR'DION, a new musical instrument, of German invention, but now also made in this country, consisting of a double series of vibrating tongues, acted on by a current of air from a sort of bellows, and producing tones very similar to those of the organ.

ACCOUNT'ANT, or ACCOMPT'ANT, in a general sense, denotes one whose business it is to compute, adjust, and range in due order accounts in commerce. In a

more restricted sense, the term is applicable to a person appointed to keep the accounts of a public company or office: thus, we say the accountant of the India-Company, the Custom-house, the Excise, &c. ——ACCOUNTANT-GENERAL, in the court of Chancery, is an officer appointed to receive all moneys lodged in court.

ACCOU'TREMENTS, the necessaries of a soldier, as belts, pouches, cartridge-boxes, &c.

ACCRE'TION, the increase or growth of a body by an external addition of new parts; thus shells, stones, and various other substances are formed.

ACCUBA'TION, the posture used among the Greeks and Romans at their meals, which was with the body extended on a couch, and the head resting on a pillow, or on the elbow, supported by a pillow. This practice was not permitted among soldiers, children, and servants; nor was it known until luxury had corrupted manners. Their couches were called ACCUBITA.

ACEPH'ALI, a sect of Christians, so called because they admitted no head, or superior, either lay or ecclesiastic.

ACER'RA, in Roman antiquity, was a small altar erected near the bed on which a dead person was laid out. Incense and perfumes were burnt upon it, till the time of the funeral. The real intention, probably, was to prevent or overcome any offensive smells that might arise about the corpse.

ACETAB'ULUM, in anatomy, is a large round cavity in a bone, which receives the convex head of another, thereby forming that species of articulation termed *enarthrosis*.——Also the name of a Roman measure equal to about one-eighth of our pint.

A'CETATES, certain neutral salts formed by the combination of acetic acid with a salifiable base, as the acetate of potash. These salts differ from acetites in this respect; the acid employed in the production of the former is fully saturated with oxygen, or the acidifying principle, that is, it is completely acid; while that which is used to form the latter, contains a less proportion of oxygen than is sufficient to saturate it.

ACE'TIC ACID, a vegetable acid, which is produced by distilling the acetous acid with metallic oxydes. It is of a green colour, but becomes white by rectification; is extremely volatile and inflammable; corrodes and cauterizes the skin; and when heated in contact with air, takes fire. It is the sour principle, in fact, which exists in vinegar.

ACETIM'ETER, an apparatus for determining the strength of vinegar.

A''CETITES, compound or neutral salts, formed by the union of the acetous acid, or distilled vinegar, with different bases: the most remarkable of these substances, and those whose properties are best known, are the acetite of alumine, copper and lead.

ACE'TOUS, an epithet applied to such substances as are sour, or partake of the nature of vinegar.——ACETOUS ACID, distilled vinegar, or the acid of vinegar, is obtained from mucilaginous substances by fermentation.

ACE'TUM, vinegar, or any acid liquor made from potable juices, particularly wine and beer.

ACHROMAT'IC, colourless; a term applied to telescopes which were first contrived by Dr. Bevis to remedy the aberrations of colour.

ACIC'ULÆ, in natural history, certain small spikes, or prickles, in form of needles, wherewith nature has armed several animals, as the hedge-hog, echinus marinus, &c.

A''CID, in a general sense, denotes such things as affect the palate with a sour, sharp, and tart taste; change blue vegetable colours to red; and combine with all the alkalis, and most of the metallic oxydes and earths, so as to form the compounds called salts. Acids are distinguished according to the proportion of oxygen which they contain, by the terminations *ic* and *ous*, as nitric acid, and nitrous acid, sulphuric acid, and sulphurous acid; the former of which denotes the larger dose or portion of oxygen, and the latter the smaller. When the prefix *hypo* is put to either of these, it denotes a degree below it in point of oxidizement, as hyposulphuric acid, an intermediate between the sulphuric and the sulphurous acid. The principal acids are vinegar and its spirits; the juices of lemons, oranges, sorrel, citrons, &c.; also the spirits of nitre, alum, vitriol, sulphur, and sea-salt. Acid and alkali have been considered by some chemists as the two athletæ of nature, the great instruments whereby all things were effected; and the cause not only of natural, but preternatural things, as diseases and cures.

ACID'IFIABLE, capable of being converted into an acid by an acidifying principle. An acidifiable base or radical is any substance that is capable of uniting with such a quantity of oxygen as to become possessed of acid properties.

ACID'ULÆ, or ACIDULATED WATERS, a species of mineral waters which contain a considerable quantity of carbonic acid, and which are known by the pungency of their taste, the sparkling appearance which they assume when shaken or poured from one vessel into another, and the facility with which they boil.

ACID'ULOUS, an epithet expressing either a slight degree of acid, or an excess of acid in a compound salt.

ACINE'SIA, the interval of rest which takes place between the contraction and dilatation of the pulse.

ACI'NUS, in botany, a name given to grapes or berries growing in clusters, in opposition to *baccæ*, or such berries as grow single.

ACLI'DES, a missile weapon, in use amongst the Romans; it was of the form of a spear with a thong tied to it, by which, after the discharge, it was drawn back.

ACOLLE', in heraldry, a term sometimes used to denote two things joined to-

gether; at other times, animals with collars or crowns about their necks; and finally, batons, or swords, placed saltierwise behind the shield.

ACOLY'THI, in ecclesiastical history, denotes candidates for the ministry, so called from their continually attending the bishop. It is also an appellation given to the stoics, on account of their steady adherence to what they had once resolved.

ACON'ITA, a vegetable poison extracted from the aconite, or wolfsbane.

A''CONITE, the plant wolfsbane, or monks-hood, the flower of which resembles the hood of a monk; the plant is a violent poison.

ACON'TIAS, in zoology, a venomous serpent, otherwise called the *anguis faculus*, or dart-snake, from its vibrating its body in the manner of a dart.

ACON'TIUM, in Grecian antiquity, a kind of dart or javelin, resembling the Roman *pilum*.

ACOUSMAT'ICI, in Grecian antiquity, such disciples of Pythagoras, as had not finished their five years' probation. The *acousmatici* were instructed by bare positive precepts and rules, without reasons or demonstrations, and these precepts they called *acousmata*.

ACOUS'TICS, that branch of science which treats of the nature and modifications of sound. It is usually divided into two parts, viz. *diacoustics*, which explains the properties of those sounds that come directly from the sonorous body to the ear; and *catacoustics*, which treats of reflected sounds. Almost all sounds that affect us are conveyed to the ear by means of the air; but water is a good conductor of sound; so also are timber and flannel. It must be observed, that a body, while in the act of sounding, is in a state of vibration, which it communicates to the surrounding air, and that the undulations of the air affect the ear, and excite in us the sense of sound. Sound, of all kinds, it is ascertained, travels at the rate of thirteen miles in a minute: the softest whisper travels as fast as the most tremendous thunder. The knowledge of this fact has been applied to the measurement of distances. Thus, if we see a vivid flash of lightning, and in two seconds hear a tremendous clap of thunder, we may be assured that the thunder cloud is not more than 760 yards distant.

ACQUIT'TAL, a discharge, deliverance, or setting free of a person from the guilt or suspicion of an offence. Acquittal is of two kinds; in law, and in fact. When two are indicted and tried for a felony, one as principal, the other as accessary, the principal being discharged, the accessary is, by consequence, also freed: in which case, as the accessary is acquitted by law, so is the principal in fact.——Acquittal is also used for a freedom from entries and molestations of a superior lord, on account of services issuing out of land.

ACQUIT'TANCE, a discharge in writing for a sum of money, witnessing that the party is paid the same.

ACRA'SIA, in medicine, the predominancy of one quality above another. It was also used to express excess of any kind, as the drinking of unmixed wine, which among the Greeks amounted to intemperance.

A'CRE, a measure of land, very general in name, but varying in different places as to the extent which it is intended to denote. The English acre contains 4 square roods, or 160 square poles of 5 yards and a half, or 4840 square yards. The French acre is equal to one and a quarter of an English acre.

AC'RID, an epithet to denote such substances as are hot, dry, and pungent to the taste.

ACRIS'IA, or A'CRISY, the want of a crisis, or discriminating state, in a disorder which is very fluctuating.

ACROAT'IC, in the Aristotelian schools, a denomination given to such lectures as were calculated only for the intimate friends and disciples of that philosopher; being chiefly employed in demonstrating some speculative or abstruse part of philosophy. The acroatic lectures stood contradistinguished from the exoteric ones, which were adapted to a common auditory.

ACROBAT'ICA, or ACROBAT'ICUM, in Grecian antiquity, an engine on which people were raised aloft, that they might have the better prospect.

ACROCERAU'NIAN, an epithet applied to certain mountains, between Epirus and Illyricum, which project into the Adriatic, and obtain their name from being often struck with lightning.

ACROCHIRIS'MUS, among the Greeks, was a sort of gymnastic exercise, in which the two combatants contended with their hands and feet only, without closing or engaging the other parts of the body. It was, in fact, a species of wrestling.

ACRO'DRYA, in natural history, all fruits that have rinds or shells, such as acorns, almonds, &c.

ACRO'MION, in anatomy, that part of the spine of the scapula which receives the end of the clavicle.

ACROMONOGRAMMAT'ICUM, a poetical compositon, wherein each subsequent verse commences with that which the verse preceding terminates.

ACRON'ICAL, or ACHRON'YCAL, in astronomy, an appellation given to the rising of a star above the horizon, at sunset; or to its setting, when the sun rises. Acronical is one of the three poetical risings of a star; the other two being called *cosmical* and *helical*.

ACROP'OLIS, the citadel of Athens. It was formerly the whole city, and at first called Acropia, from Acrops the founder; but, after the inhabitants were greatly increased in number, the whole plain around it was filled with buildings, and the original city became the centre, under the denomination of Acropolis, or the upper city.

A'CROSPIRE, the popular term for what among botanists is called the germ, plume, or plumule.

ACROS'TIC, a poem, the lines of which are so contrived, that the first letters of each, taken together, will make a proper name or other word.

ACROS'TICUM, in botany, the name of a genus of the *cryptogamia* class of plants, and of that order called the *filices*, the fructifications of which are collected into clusters, and cover the whole under-surface of the leaves.

ACROSTO'LIUM, in the naval architecture of the ancients, the extreme part of the ornament used on the prows of their ships. It was usual to tear the *acrostolia* from the prows of vanquished ships, as a token of victory.

ACROTE'RIA, in architecture, small pedestals, upon which globes, vases, or statues stand at the ends or middle of pediments. It also denotes the figures themselves placed in such situations.——Among ancient physicians, the term ACROTERIA was used to denote the larger extremities of the body.

ACROTHYM'IA, in surgery, a large tumour, usually rising in the shape of a wart, though sometimes depressed and flat.

ACT, in a general sense, denotes the exertion, or effectual application, of some power or faculty. Act is distinguished from power, as the effect from the cause, or as a thing produced, from that which produces it.——ACT, among logicians, more particularly denotes an operation of the human mind; in which sense, comprehending, judging, willing, &c. are called acts.——ACT, in law, is used for an instrument or deed in writing, serving to prove the truth of some bargain or transaction. Thus, records, certificates, &c. are called acts.——ACT is also used for the final resolution, or decree of an assembly, senate, council, &c.——ACTS of parliament are called statutes; acts of the royal society, transactions; those of the French academy of sciences, memoirs; those of the academy of sciences at Petersburg, commentaries; those of Leipsic, *acta eruditorum;* the decrees of the lords of session, at Edinburgh, *acta sederunt*, &c.——ACT, in the universities, is the delivery of orations, or other exercises, in proof of the proficiency of a student who is to take a degree. At Oxford, the time when masters or doctors complete their degrees, is called the *act*. At Cambridge, the same period is called the *commencement*.——ACT, in a dramatic sense, is the name given to certain portions of a play, intended to give respite both to the spectators and the actors. In the ancient drama, five acts were required both in tragedy and comedy; and in what is termed the regular drama that rule is still observed, the acts being divided into smaller portions, called *scenes*.

ACT OF FAITH, or AUTO-DA-FE. In dark and barbarous countries, where the Spanish inquisition had power, the *act of faith* was a solemn murder of infidels and heretics, usually performed on some great festival, and always on a Sunday.——ACT OF GRACE, in English law, an extraordinary act of the king in council, whereby, at the beginning of a new reign, or on other great occasions, a free pardon has been sometimes granted to criminals.

ACTS OF THE APOSTLES, a canonical book of the New Testament, which contains great part of the lives of St. Peter and St. Paul; commencing at the ascension of our Saviour, and continued down to St. Paul's arrival at Rome, after his appeal to Cæsar; comprehending in all about thirty years. St. Luke has been generally taken for the author.

AC'TA PUB'LICA, in Roman history, the journal of the senate. It seems to have resembled the votes of the House of Commons amongst us, wherein a short account was given to the public of what passed in the senate-house.

AC'TA DIUR'NA, was a sort of Roman gazette, containing an authorised narrative of the transactions worthy of notice, which happened at Rome.

AC'TA CONSISTO'RII, the edicts or declarations of the council of state of the emperors.

AC'TIAN GAMES, or LUDI ACTIACA, were instituted in commemoration of the victory obtained by Augustus over Anthony at Actium. They returned every fifth year, according to the general opinion, and were sacred to Apollo, who was then called Actius Apollo. Actian years became an era, commencing from the battle of Actium, called also the era of Augustus. The Actian games consisted of shows of gladiators, wrestlers, and other exercises, and were kept generally at Nicopolis, a city built by Augustus, near Actium, for that purpose, with a view to perpetuate the fame of his victory.

ACTIN'IA, or SEA ANEMONIES, in zoology, a genus belonging to the order of *vermes mollusca*. They are viviparous, and form one of those wonderful links in the chain of creation, that connect the animal and vegetable kingdoms, by partaking of the nature of both.

ACTIN'OLITE, a mineral, of which there are three varieties, the crystallized, the asbestous, and the glassy. It is principally found in primitive districts, with a magnesian basis.

AC'TION, in mechanics and physics, is the pressure or percussion of one body against another. It is one of the laws of nature, that action and re-action are equal, that is, the resistance of the body moved is always equal to the force communicated to it; or, which is the same thing, the moving body loses as much of its force as it communicates to the body moved.——ACTION, in ethics, something done by a free or moral agent, capable of distinguishing good from evil. The essence of a moral action consists in its being done knowingly and voluntarily: that is, the agent must not only be able to distinguish whether it be good or bad in itself; but he must likewise be entirely free from compulsion of any kind, and at full liberty to follow the dictates of his own understanding. Hence

ACTIVE CAPITAL, IS PROPERTY THAT MAY READILY BE CONVERTED INTO MONEY, AND USED IN TRADE OR COMMERCE FOR PROFIT.

ACTIVE COMMERCE, IS THAT IN WHICH A NATION CARRIES ITS OWN PRODUCTIONS AND FOREIGN COMMODITIES IN ITS OWN SHIPS.

the actions of idiots, slaves, &c. cannot be called moral. Hence also appears the absurdity of fatalism, which undermines the very foundation of morality.——ACTION, in rhetoric, may be defined, the accommodation of the voice, but more especially the gesture of an orator, to the subject he is upon. Cicero tells us, "that it does not so much matter what an orator says, as how he says it." Horace, in his art of poetry, is no less explicit in setting forth its vast influence on mankind:

"With those who laugh, our social joy appears;
With those who mourn, we sympathize in tears;
If you would have me weep, begin the strain,
Then I shall feel your sorrows; feel your pain."

ACTION, in a theatrical sense, is nearly the same with action among orators; only the actor adapts his action to an assumed character, whereas the orator is supposed to be in reality what his action expresses. ——ACTION, in painting and sculpture, denotes the posture of a statue or picture, serving to express some passion, &c.—— ACTION, in the military art, is an engagement between two armies, or between different bodies of troops belonging thereto.

ACTIONS, in law, are either criminal or civil. [For the various kinds, see *Dictionary of Law Terms*, in the "Treasury of Knowledge."]

AC'TIONARY, in commerce, a term used among foreigners, for the proprietor of an action or share of a public company's stock.

AC'TIVE, in a general sense, denotes something that communicates motion or action to another, in which sense it stands opposed to passive.——ACTIVE, among grammarians, an appellation given to words expressing some action, as I write, I read, &c.——ACTIVE POWER, in metaphysics, the power of executing any work or labour; in contradistinction to speculative powers, as those of seeing, hearing, reasoning, &c. ——ACTIVE PRINCIPLES, in chemistry, those which act of themselves, without any foreign assistance: such are mercury, sulphur, and salt, supposed to be. Some authors contend that sulphur, or fire, is the only active principle and source of all the motion in the world; and there are others who call oil, salt, and spirit, active principles, merely because their parts are better fitted for motion than those of earth or water.

AC'TOR, in a dramatic sense, is a man who enacts some part or character in a play. It is remarkable with what difference actors were treated among the ancients. At Athens they were held in such esteem, as to be sometimes sent on embassies to foreign powers; whereas, at Rome, if a citizen became an actor, he thereby forfeited his freedom. Actors in the present day have little to complain of, in regard to the treatment they receive: according as they contribute to the gratification of the public so are they rewarded; and if their moral conduct be irreproachable, no persons are more esteemed or lauded.

AC'TRESS, a female dramatic performer. They were unknown to the ancients, among whom men always took the parts of women. Nor were they introduced on the English stage till the days of the Stuarts.

ACTUA'RIUS, or ACTA'RIUS, in Roman antiquity, an officer, or rather notary, appointed to write down the proceedings of a court.——*Actuarii* were also officers who kept the military accounts, and distributed the corn to the soldiers.

AC'TUARY, the chief clerk, or person, who compiles minutes of the proceedings of a company in business.

AC'TUS, in antiquity, a measure of length containing one hundred and twenty Roman feet.

ACU'LEATE, or ACU'LEATED, an appellation given to any thing that has *aculei*, or prickles: thus, in ichthyology, fishes are divided into *aculeated*, and *non-aculeated*.

ACU'MEN, mental sharpness, or quick discernment; great intellectual capacity. In ancient music, *acumen* denotes a sound produced by raising the voice to a high pitch.

ACU'MINA, in antiquity, a kind of military omen, taken from the points or edges of spears, swords, &c.

ACUPUNCTURA'TION, an oriental practice of puncturing diseased parts of the body with fine needles, by which the morbid galvanic action of the parts is restored, and painful disorders removed. In China and Japan it has been a part of their system of surgery time out of mind, and of late years it has been in some repute in England.

ACU'TE, an appellation given to such things as terminate in a sharp point, or edge: thus, we say an acute angle, acute-angled triangle, &c.——ACUTE, in music, an epithet given to sharp or shrill sounds, in opposition to those called grave.——ACUTE DISEASES are distinguished from CHRONIC, by being attended with violent symptoms, and requiring immediate aid: chronic diseases, those which usually last long.

ACYROLO'GIA, in grammar, denotes an improper word, phrase, or expression: it differs a little from the catachresis.

AD, a Latin preposition, expressing the relation of one thing to another. It is frequently prefixed to other words: thus, AD HOMINEM, among logicians, an argument drawn from the professed belief or principles of those with whom we argue.—— AD LUDOS, in Roman antiquity, a kind of punishment, whereby the criminals entertained the people, either by fighting with wild beasts, or with each other.——AD VALOREM, in commerce, according to the value.——AD INFINITUM, indefinitely, or to infinity.

ADA'GIO, a degree quicker than grave time, in music, but with graceful and elegant execution.

AD'AMANT, a sort of diamond, and the

hardest, most brilliant, and most valuable of the precious stones.

AD'DER, a small poisonous serpent with plaits on the belly, and scales under the tail; it is by no means rare in Britain.

ADDICTI, in Roman history, those who were delivered over to their creditors to be made slaves until they discharged their debts.

ADDI'TION, in a general sense, is the uniting or joining several things together: or, it denotes something added to another. ——ADDITION, in arithmetic, the first of the four fundamental rules of that art, whereby we connect into a total sum several small ones. When the number has only *one* kind of figures, it is called *simple* addition; when it has two or several denominations, it is *compound*.——ADDITIONS in law, denote all kinds of designations given to a man, over and above his proper name and surname, to show his estate, degree, profession, place of abode, &c.

ADENOG'RAPHY, or ADENOL'OGY, that part of anatomy which treats of the glands.

ADDORS'ED, a term in heraldry, signifying back to back.

A'DEPS, in anatomy, denotes the fat found in the abdomen; differing from the common fat or *pinguedo*, as being thicker, harder, and of a more earthy substance.—— ADEPS, among physicians, is used in a more general sense, for all kinds of animal fat.

ADHE'SION, the phenomenon by which the particles of bodies continue together. *Adhesion* denotes union to a certain point between two bodies, and *Cohesion* retains together the component particles of the same mass.——ADHESION, among logicians, denotes the maintaining some tenet, merely on account of its supposed advantage, without any positive evidence of its truth. ——In medicine, it signifies the junction of parts that ought to be separated.

ADIAN'THUM, in botany, maiden-hair; a genus of plants of the order *filices*, and class *cryptogamia*. They are perennials.

ADIPO'CERE, a substance resembling spermaceti, which is formed from an animal in its progress towards decomposition.

AD'IPOSE, in a general sense, denotes something belonging to the fat of the body. The term adipose is chiefly used by physicians and anatomists, in whose writings we read of adipose cells, adipose ducts, adipose membranes, adipose vessels, &c.

A'DIT OF A MINE, the aperture whereby it is entered, and the water and ores carried away; it is distinguished from the air-shaft, and usually made on the side of a hill.——ADIT OF A SHIP, in antiquity, was a space in the upper part, where the ship was widest, at which people entered.—— ADITS OF A THEATRE, were doors on the stairs, whereby persons entered from the outer porticoes, and descended into the seats.

AD'JECTIVE, in grammar, a word expressing some quality, or other accident, of the substantive with which it is joined.

ADJOURN'MENT, the putting off a court or other meeting till another day. In parliament, adjournment differs from prorogation, the former being not only for the shorter time, but also done by the house itself, whereas the latter is an act of royal authority.

AD'JUNCT, some quality belonging either to body or mind, either natural or acquired. Thus, thinking is an adjunct of the mind, and growth of the body. It also denotes something added to another, without being any necessary part of it. Thus water absorbed by a sponge is an adjunct, but no necessary part of that substance.

AD'JUTANT, a military officer, whose duty it is to carry orders from the major to the colonel and serjeants. When detachments are to be made, he gives the number to be furnished by each company or troop, and assigns the hour and place of rendezvous. He also places the guards, receives and distributes the ammunition to the companies, &c.

AD'JUTANT-GEN'ERAL, an officer of distinction, who assists the general, by forming the several details of duty of the army with the brigade majors.

ADLOCU'TION, or ADLOCU'TIO, in Roman antiquity, the address made by generals to their armies, in order to rouse their courage before a battle.

ADMIN'ICLE, in Scotch law, signifies any writing or deed referred to by a party, in an action of law, proving his allegations.

ADMINISTRA'TION, the executive government of a country.

ADMINISTRA'TOR, in law, the person to whom the estate and effects of an intestate are committed, for which he is to be accountable when required.

AD'MIRAL, the commander of a fleet of ships of war; having two subordinate commanders, as vice-admiral and rear-admiral; and distinguished into three classes, by the colour of their flags, as white, blue, and red. The admiral carries his flag at the main-top-mast head; the vice-admiral at the fore-top-mast head; and the rear-admiral, at the mizen-top-mast head.——The LORD HIGH ADMIRAL OF GREAT BRITAIN, called in some ancient records, *Capitaneus Marinorum*, is judge or president of the court of admiralty. He has the management of all maritime affairs, and the government of the royal navy, with power of deciding in all maritime causes, both civil and criminal. In short, his power is so extensive and absolute in all matters that come under his cognizance, that the office has usually been given to princes of the blood, or the most eminent persons among the nobility. For a short time it was filled by his late Majesty William IV. when duke of Clarence, after having been in abeyance just a century; during which period, as at present, the office was executed by a certain number of commissioners, called lords of the admiralty.

AD'MIRALTY, COURT OF, is a sovereign court, instituted by Edward III., and held by the lord high-admiral, or the commissioners of the admiralty; where cognizance

IN THE ROMAN LAW, THE MAKING OVER GOODS TO ANOTHER, EITHER BY SALE OR LEGAL SENTENCE, WAS TERMED BONA ADDICTA.

AMONG THE JESUITS, A SELECT NUMBER WERE CALLED ADJUTANTS-GENERAL, EACH OF WHOM HAD A PROVINCE OR COUNTRY ASSIGNED HIM.

is taken in all maritime affairs, civil or criminal. All crimes committed on the high-seas, or in great rivers, beneath the bridge next the sea, are cognizable only in this court, by judge and jury, and before which they must be tried.——VICE-ADMIRALTY COURTS, are established in all the dependencies of Great Britain, and have cognizance of all cases of captured vessels, misdemeanours in merchant ships, &c.

ADMITTEN'DO CLERICO, a writ granted to a person who has recovered his right of presentation in the common pleas; by which the bishop, or metropolitan, is ordained to admit his clerk.——ADMITTENDO IN SOCIUM, a writ associating certain persons to the justices of assize already appointed.

ADMONI'TIO FUS'TIUM, among the Romans, a military punishment, not unlike our whipping, only that it was performed with vine branches.

ADMORTIZA'TION, in the feudal customs, the reducing the property of lands or tenements to mortmain.

ADNA'TA, in anatomy, one of the tunics or coats of the eye, otherwise called *conjunctiva* and *albuginea*, and is the same with the white of the eye. Also, an epithet for what grows upon animal or vegetable bodies, inseparably, as hair, &c., or accidentally, as fungus, &c.

ADONA'I, one of the names of God used in the Scriptures, and properly signifying *my lords*, in the plural, as ADONI does *my lord*, in the singular number.

ADO'NIA, solemn feasts in honour of Venus, instituted in memory of her beloved Adonis, and observed with great solemnity by the Greeks, Phœnicians, Lycians, Syrians, Egyptians, &c. They lasted two days, during the first of which the women carried about images of Venus and Adonis, weeping, tearing their hair, beating their breasts, and using every token of grief. On the second, they sung his praises, and made rejoicings, as if Adonis had been raised to life again.

ADOP'TION, a practice among the Greeks and Romans, of making a person one's heir, and investing him with all the rights and privileges of a son. In Rome, before adoption could take place, the natural father was obliged to renounce all authority over his son, and with great formality consent that he should be translated into the family of the adopter. The adoption of a person already free was called *adrogation*.——ADOPTION, in a theological sense, denotes an act of God's free grace, whereby those who believe in Christ are accounted the children of God, and entitled to a share in the inheritance of the kingdom of heaven.

ADORA'TION, a mode of reverence or worship anciently shown to the gods, by raising the right hand to the mouth, and gently applying it to the lips; also, in general, any outward sign of worship, by kissing the hand or feet, walking barefoot, or the like. Among the Jews, adoration consisted in kissing the hands, bowing, kneeling, and even prostration. But the posture of adoration most common in all ages and countries, is kneeling; and it is by far the most natural, as it implies humility, and a consciousness of the necessity of self-abasement.

ADO'REA, in Roman antiquity, grain, or a kind of cakes made of fine flour, and offered in sacrifice; a dole or distribution of corn, as a reward for some service; whence, by metonymy, it is put for praise or rewards in general.

ADOSCULA'TION, the impregnation of plants, effected by the falling of the farina fœcundans on the pistil.

ADOSSE'E, in heraldry, two animals placed back to back. It also denotes any other figure, as axes, keys, &c. placed with their heads facing different ways.

AD PON'DUS OM'NIUM, among physicians, denotes, that the last-mentioned ingredient ought to weigh as much as all the before-mentioned ingredients together.

AD QUOD DAM'NUM, in law, a writ issued before the king grants certain liberties, as a fair, market, &c.; ordering the sheriff to inquire what damage such a grant is likely to be attended with.

ADROGA'TION, in antiquity, that kind of adoption which took place in regard to a person already his own master. See ADOPTION.

ADSIDEL'LA, in antiquity, the table at which the priests sat during the sacrifices.

ADSTRIC'TION, among physicians, a term used to denote the too great rigidity and closeness of the emunctories of the body, particularly the pores of the skin; also to signify the styptic quality of medicines.

AD TER'MINUM QUI PRÆTERIIT, in law, a writ of entry, that lies for the lessor or his heirs, if after the expiration of a term for life or years, granted by lease, the tenant or other occupier of the lands, &c. withholds the same from such lessor.

ADULTERA'TION, in a general sense, denotes the act of debasing, by an improper mixture, something that was pure and genuine. Thus, adulteration of coin, is the casting or making it of a metal inferior in goodness to the standard, by using too great a proportion of alloy. Inferior ingredients put into bread, beer, wine, &c. by bakers, brewers, and other traders, for the purpose of imposing on the public, is also called adulteration, and cannot be too severely reprehended or punished; the consequences often proving fatal to the health, and always greatly abridging the comforts, of those who are the victims of such nefarious practices.

ADUL'TERY, a violation of the nuptial bed; a crime which has been regarded by all civilized nations with abhorrence, and in ancient times was punished as a capital offence. By the Jewish law, the penalty was death. In England it is at present considered a spiritual offence, cognizable by the spiritual court, where it is punished by fine and penance; but by the common

law, the party aggrieved can only proceed by action for damages.

ADUST', an appellation given to such humours as are become of a hot and fiery nature. Thus blood is said to be adust, when, the more subtile and volatile part being evaporated, the remainder is vapid and impure.

ADUS'TION, an inflammation of the parts about the brain and its membranes, attended with hollowness of the sinciput and eyes, a pale colour, and dryness of the body. Also, a surgical operation, of a nature similar to cauterization.

ADVA'NCE, in commerce, money paid before goods are delivered, work done, or any consideration given.

ADVA'NCED-GUARD, or VAN'-GUARD, in the military art, the first line or division of an army ranged or marching in order of battle.

AD'VENT, the coming of our Saviour; also the festival commemorative of the Advent, which falls about a month before Christmas.

ADVEN'TURE, Bill of; in commerce, a writing signed by a merchant, to testify that the goods shipped on board a certain vessel belong to another person, he himself being answerable only for the produce. It also means, the goods sent out at a venture.

AD'VERB, a word so called from its signification and connexion with verbs; though they are also frequently joined with adjectives and other parts of speech to modify their meaning.

ADVERSA'RIA, a memorandum-book, journal, or common-place book.

ADVER'TISEMENT, any printed publication of circumstances, either of public or private interest, particularly that inserted in the newspapers.

AD'VOCATE, a barrister; a pleader in civil or ecclesiastical causes. Advocates were held in great honour during the first ages of the Roman commonwealth, being styled *comites*, *honorati*, *clarissimi*, and even *patroni*. And in almost every civilized country, men of the first talents are found among its advocates.——The Lord Advocate is an officer of state in Scotland, who pleads in all causes of the crown, or where the king is concerned.

ADVOCA'TION, among civilians, the act of calling another to assist us by pleading some cause.——Letters of Advocation, in the law of Scotland, signify a writ issued by the lords of session, advocating or calling a cause from an incompetent judge to themselves.

ADVOWE'E, in law, signifies the patron of a church, or he who has a right to present to a benefice.

ADVOW'SON, in law, a right of presentation to a vacant church or benefice. He who possesses this right is called the patron of the living. This right is so called because it was first gained by such as were founders, benefactors, or maintainers of the church. Advowsons are either *presentative*, as when the patron presents or offers his clerk to the bishop to be instituted; *collative*, as where the benefice is given by the bishop, as original patron thereof, or by means of the right he has acquired by lapse; or *donative*, as where the king, or other patron, by a simple donation in writing, puts the clerk into possession, without presentation, institution, or induction.

A'DY, the palm-tree of the island of St. Thomas; the fruit of which is of the size and shape of a lemon, and contains an aromatic kernel, from which an oil, answering the purpose of butter, is prepared.

AD'YTUM, the most retired and secret place of the heathen temples, into which none but the priests were allowed to enter. The adytum of the Greeks and Romans answered to the sanctum sanctorum of the Jews, and was the place from whence oracles were delivered. The term is purely Greek, signifying inaccessible.

ÆACE'A, in Grecian antiquity, solemn festivals and games in honour of Æacus, who, on account of his justice upon earth, was thought to have been one of the judges in hell. At the end of the solemnity, the victors in the games used to present a garland of flowers.

ÆCHMOL'OTARCH, the title given to the principal leader or governor of the Jewish captives residing in Chaldæa, Assyria, and the neighbouring countries. The Jews themselves call this magistrate *Roschgaluth*, or chief of the captivity.

Æ'DES, in Roman antiquity, besides its more ordinary signification of a house, or the internal part of a house, where the family used to eat, likewise signified an inferior kind of temple, consecrated indeed to some deity, but not by the augurs. There were a vast number of these in ancient Rome: thus we read of the *ædes fortunæ*, *ædes pacis*, *ædes Herculis*, &c.

ÆDIC'ULA, a small ædes or temple, which was erected in every village or parish.

ÆDI'LES, a Roman magistrate, whose chief business was to superintend buildings of all kinds, but more especially public ones, as temples, aqueducts, bridges, &c.; and to take care of the highways, weights, and measures, &c. The Ædiles were distinguished into the *ædiles plebeii*, who were chosen from the plebeians, as assistants to the tribunes; and the *ædiles curules*, from the patricians, to provide for certain public games.

ÆDIT'UUS, an officer who had the charge of the Roman temples.

Æ'GILOPS, an abscess in the canthus, or corner of the eye near the nose.——Ægilops, in botany, is the *cerrus*, or holm-oak.

Æ'GIS, a shield, particularly the shield of Jupiter.——In anatomy, the term Ægis is used for an affection of the eye, when it has small cicatrices, which cause a dimness of sight.

ÆGOPHTHAL'MOS, the goat's-eye stone; those species of agate or other semipellucid gems which have circular spots in them, resembling the eye of the goat.

THE COMPUTATION OF TIME, BY THE CHRISTIAN ÆRA, IS GENERALLY BELIEVED TO HAVE NOT BEEN INTRODUCED TILL THE SIXTH CENTURY.

IF IS A DOCTRINE OF HYDROSTATICS, THAT IF A BODY BE LIGHTER THAN A FLUID, THAT FLUID WILL BEAR IT UP; HENCE CAME AEROSTATION.

ÆNE'ID, the title of Virgil's epic poem, in which he celebrates the adventures of Æneas, one of the bravest among the Trojan heroes. The author introduces him as sailing from Troy, after its destruction, in search of the shores of Italy, on which it had been promised by the gods that he should found an empire destined to be immortal; and the poem ends with the complete success of Æneas over Turnus, king of the Rutuli, whose dominions he had invaded, and who falls by his hand. The unrivalled force, elegance, and beauty of Virgil's style have been the theme of admiration in every succeeding age, and given him an indisputable right to a niche in the temple of Apollo, second only to that of Homer.

ÆO'LIAN HARP, an arrangement of strings placed in a window and played upon by the wind. It produces the effect of a distant choir of music in the air, sweetly mingling all the harmonic notes, and swelling or diminishing its sounds according to the strength or weakness of the blast.

ÆOL'OPILE, a hollow metal ball, in which is inserted a slender neck, or pipe; from whence, after the vessel has been partly filled with water, and heated, issues a powerful gust of wind. It also serves to show the convertibility of water into steam.

Æ'RA, or E'RA, a fixed historical period whence years are reckoned: as the building of Rome, or the birth of Christ. Era and Epoch are not exactly synonymous. An *era* is a point fixed by a particular people or nation; an *epoch*, one determined by chronologists and historians. The idea of an era, also, comprehends a certain succession of years, proceeding from a fixed event; and an epoch is that event itself.

ÆRA'RIUM, in Roman antiquity, the treasury, or place where the public money was deposited. *Ærarium* and *fiscus* are sometimes used in a synonymous sense, although the latter, strictly speaking, contained only the money belonging to the emperor.——Ærarium Ilithiæ, or Junonis Lucinæ, a place where the monies were deposited, which parents paid on the birth of each child. There are several other treasuries mentioned by historians, as the *ærarium juventutis, veneris*, &c.

ÆRA'RIUS, in a general sense, denotes any person employed in coining, or managing the public moneys; but the word was more particularly used by the Romans for a degraded citizen, whose name had been struck off the list of his century. The *ærarii* were so called on account of their being liable to all the taxes and other burdens of the state, without enjoying any of its privileges.

AERODYNAM'ICS, that branch of aerology which treats of the powers and motion of elastic fluids. Aerodynamics are often explained in connexion with hydrodynamics, a branch of hydrology.

AEROG'RAPHY, a description of the air, or atmosphere, its limits, dimensions, and other most obvious properties.

AE'ROLITES, meteoric stones, which fall in a state of combustion from the atmosphere.

AEROL'OGY, the doctrine or science of air, as connected with the animal economy. [See Air, Atmosphere, and Gas.]

AE'ROMANCY, a kind of divination amongst the Greeks, and from them adopted by the Romans, whereby they pretended to foretel future events from certain spectral phænomena or noises in the air. By aeromancy, in the present day, is meant the art of foretelling the changes and variations of the air and weather, by means of meteorological observations; but, judging by the attempts which have hitherto been made, the science, as it is called, seems to be little better than guess-work.

AEROM'ETRY, the art of measuring the air, so as to ascertain its pressure or weight, its elasticity, rarefaction, &c.

A'ERONAUT, one who sails in the air in a balloon.

AERONAU'TICS, or AEROSTA'TION, the art of navigating the air, by employing air-balloons, or silken globes, filled with gas lighter than atmospheric air.

ÆRU'GO, in natural history, properly signifies the rust of copper. Ærugo is either natural, as that found about coppermines; or artificial, like verdigris.

ÆRU'GINOUS, an epithet given to such things as resemble, or partake of the nature of, the rust of copper.

ÆSCHYNOM'ENOUS, an epithet for "sensitive" plants, or such as move upon being touched. The term *Æschynomene* is used to denote this genus of plants, of which there are many species.

ÆSTIVA, summer encampments for the Roman soldiers, in distinction from the *hibernia*, or winter quarters.

Æ'STIVAL, in a general sense, denotes something connected with, or belonging to summer. Hence we say æstival point, æstival sign, æstival solstice, &c.

ÆSTIVA'TION, in botany, the state of the bud in summer, or the disposition of the petals within the flower-bud when they have arrived at perfection.

Æ'THER, the most subtile of all fluids, which, commencing from the limits of our atmosphere, occupies the firmament which is above the region of the air. The term is used by natural philosophers ancient and modern; but not always in the same signification. According to electricians, it is the electric fluid, or solar light. It may, however, generally be understood to be a fluid that fills all space; in which the stars revolve; and which, when impregnated with earthy exhalations, forms the air or atmosphere.

Æ'THIOPS, a medicine, so called from its black colour, of which there are various kinds, as *Æthiop's mineral, antimonial Æthiops*, &c.

Æ'TITES, or EAGLE-STONES, a name given to pebbles or stones of any kind, which have a loose nucleus rattling within them. These eagle-stones are frequently found in our gravel-pits.

AFFETUO'SO, *affetto*, Ital., in a tender

and affecting style; a term employed in music-books, at the beginning of a movement.

AFFI'ANCE, in law, denotes the mutual plighting of troth, between a man and a woman; to bind one's self to the performance of a marriage contract.

AFFIDA'VIT, an oath in writing, taken before some person who is legally authorized to administer the same.

AFFIN'ITY, in civil law, the relationship in which each of the parties married stands to the kindred of the other. Affinity is distinguished into three kinds: 1. Direct affinity, or that subsisting between the husband and his wife's relations by blood; or between the wife and her husband's relations, by blood. 2. Secondary affinity, or that which subsists between the husband and his wife's relations, by marriage. 3. Collateral affinity, or that which subsists between the husband and the relations of his wife's relations. It should, however, be observed, that a person cannot, by legal succession, receive an inheritance from a relation by affinity; neither does it extend to the nearest relations of husband and wife, so as to create a mutual relation between them.——Affinity, in chemistry, the attractive power observable in the different parts of bodies, by which they combine; as the affinity of sulphuric acid for potash and lime.

AFFI'ON, an Arabic name for opium.

AFFIRMA'TION, a simple asseveration, which, according to a set form of words, is allowed to the Quakers in lieu of taking an oath. False affirmation is subject to the same penalties as perjury.

AFFIR'MATIVE, an epithet used by logicians for a species of proposition wherein any predicate is affirmed of its subject; as, "a dog is a quadruped:" here "*quadruped*" is affirmed of a dog.

AF'FIX, in grammar, a particle added at the close of a word, either to diversify its form, or alter its signification.

AFFLA'TUS, in a general sense, a divine influence communicating to the receiver supernatural powers, particularly the gift of prophecy. Among heathen mythologists and poets, it denotes the actual inspiration of some divinity: thus Virgil,

"afflata est numine quando
Jam propriore Dei."

Tully, however, extends the meaning of the word farther, by attributing all great actions to a divine *afflatus*.

AFFRONTE'E, in heraldry, an appellation given to animals facing each other.

AFLOAT', a term used to denote that a ship is in water sufficiently deep to buoy her up.

A'FORA, in botany, an epithet for the pericarps of plants that are without valves.

A FORTIO'RI, a term implying that what follows is a more powerful argument than what has been before adduced.

AF'TERMATH, the grass which springs or grows up after mowing; or the grass, or stubble, cut after corn.

A'GA, in the Mogul language, a great lord or commander; in the Turkish, it is applied, in courtesy, to a gentleman or wealthy landholder; or on account of post or rank, as to the commander-in-chief of the janissaries. The chief officers under the khan of Tartary are also called *agas*.

AGALMAT'OLITE, a soft mineral substance, chiefly found in China, where it is wrought into various ornaments.

AG'APÆ, love-feasts kept by the ancient christians, as a token of brotherly charity and mutual benevolence. In course of time abuses crept in, and rendered the abolition of them necessary.

AGAPE'TÆ, a society of unmarried women among the primitive christians, who attended on and served the clergy. At first there was nothing improper in these societies, though they were afterwards charged with gross immoralities, and were wholly abolished by the council of Lateran, in 1139.

AG'ARIC, or AGA'RICUM, a genus of plants, of the cryptogamia algæ class, growing on the trunks of trees, and resembling the common mushroom, both in substance and structure.

AG'ATE, a precious stone, or mineral, composed of various substances, as chalcedony, cornelian, jasper, &c.; also a stone of the agate kind engraven by art, which constitutes, among antiquarians, a species of gems.

AGE, a certain period or limit of time, marked for the convenience of chronology and history by some remarkable events. Chronologers usually reckon seven such ages, namely, 1. From the creation to the deluge. 2. From the deluge to the birth of Abraham. 3. From the birth of Abraham to the departure of the Israelites out of Egypt. 4. From the departure of the Israelites to the building of the temple by Solomon. 5. From the laying the foundation of the temple to the reign of Cyrus in Babylon. 6. From the reign of Cyrus to the coming of Christ. 7. Since the birth of our Saviour.—Among ancient historians, the duration of the world was also subdivided into three periods, or ages: the first, reaching from the creation to the deluge which happened in Greece during the reign of Ogyges, is called the obscure or uncertain age; the second, called the fabulous or heroic, terminates at the first olympiad; where the third, or historical age, commences. The poets also distinguished the period of the world into four ages; the *golden age*, or the age of simplicity and happiness; the *silver age*, which was less pure than the golden age, and in which men began to till the ground for their sustenance; the *brazen age*, when strife and contentions began; and the *iron age*, when justice and honour had left the earth.——Age, in law, signifies certain periods of life, when persons of both sexes are considered competent to perform certain acts, which, for want of years and discretion, they were incapable of before: thus a man may take the oath of allegiance at twelve years of age; is at the age of discretion at fourteen

to choose his guardian and contract a marriage; and is at full age at twenty-one. A woman at the age of nine is dowable; at twelve may confirm her consent to marriage; at fourteen may receive her land into her own hands; and at twenty-one may alienate her lands and tenements. Among ancient physiologists, the life or age of man was divided into six stages: *pueritia*, or childhood, extending from birth to the year 5; *adolescentia*, or boyhood, to the year 18; *juventus*, or youth, to the year 30; *virilis ætas*, manhood, to 50; *senectus*, old age, to 60; *crepita ætas*, decrepitude, to death.——By the Roman law, different ages were ascertained for different purposes. Thus the consular age, or that at which a person might hold the consulship, was the 43rd year; the judiciary age, between the 30th and 60th year; the military age, 17 years; the prætorian age, 40 years.

AGEN'DA, among divines, sometimes signifies things which a man is bound to perform, in opposition to *credenda*, which he is bound to believe. It also denotes the service or offices of the church.

A'GENT, in a general sense, denotes any thing which acts, or produces an effect. Agents are either *natural* or *moral*. Natural agents are all such inanimate bodies as have a power to act upon other bodies, in a certain and determinate manner: such is fire, which has the invariable property or power to warm or heat. Moral agents, on the contrary, are rational creatures, capable of regulating their actions by a certain rule.——AGENT, free or voluntary, in metaphysics, is he who may equally do any thing, or its opposite, as acting not from any predetermination, but from choice.——AGENT is also used to denote a person entrusted with the management of an affair, whether belonging to a society, company, or private person. Thus there are *army agents*, through whom every regimental concern of a pecuniary nature is transacted; and *navy agents*, who are employed by officers and seamen to manage their concerns in regard to pay, prize-money, &c.

A'GER, a certain portion or measure of land anciently allowed in the division of grounds to each citizen of Rome.

AG'GER, in the ancient military art, a bank or rampart, composed of various materials, as earth, boughs of trees, &c. The agger of the ancients was of the same nature with what the moderns call lines. It was also used in several other senses, as for a wall or bulwark, to keep off the sea; for the middle part of a military road, usually raised into a ridge, &c.

AGGLUTINA'TION, among physicians, signifies either the adherence of new substance, or the giving a glutinous consistence to the animal fluids, whereby they become more fit for nourishing the body. It is also used by astronomers, to denote the formation of nebulæ by the seeming coalition of several stars.

AG'GREGATE, in a general sense, denotes the sum of several things added together, or the collection of them into one whole.——AGGREGATE is also used to denote an order of plants in the Linnæan system, having compound flowers with separate anthers.

AGGREGA'TION, in physics, a species of union, whereby several things, which have no natural dependence or connexion with each other, are collected together; thus, a heap of sand, or a mass of ruins, are bodies by aggregation.——In chemistry, it means the adhesion of parts of the same kind; as pieces of sulphur united by fusion form an aggregate.

A'GIO, in commerce, a term chiefly used in Holland and at Venice, to signify the difference between the value of bank-stock and the current coin.

AGIOSYMAN'DRUM, a wooden instrument used by the Greek and other churches under the dominion of the Turks, to call together their congregations; the use of bells having been prohibited.

AGIST', AGIST'MENT, AGIST'AGE, or AGISTA'TION, in law, the taking in other people's cattle to graze, at so much per week. The term is peculiarly used for the taking in cattle to be fed in the king's forests, as well as for the profits thence arising.——AGISTMENT is also used in a metaphorical sense, for any tax, burden, or charge.

AGIS'TOR, or AGISTA'TOR, an officer belonging to forests, who has the care of the cattle taken in to graze, and collects the money due on that account.

A"GITATOR, in antiquity, a term sometimes used for a charioteer, especially those who drove in the circus at the curule games.——AGITATORS, in English history, were certain persons appointed by the army in 1647, to take care of its interests, and to control the parliament. Two private men, or inferior officers, were chosen from each troop or company; and this body, when collected, was presumed to equal the house of commons; while the peers were represented by a council of officers of rank. Cromwell at first found it convenient to league with them; but when his authority was confirmed, he quickly found means to put down these *levellers*, as they were then called on account of their wish to abolish royalty and introduce an universal equality both of property and power. At the present day, the term *agitator* is applied to any political demagogue, and he is generally bold in proportion to the want of firmness in those against whom he declaims.

AGITATO'RES, those who drove the chariots at the public games at Rome.—— This name was also given to players in the middle ages, who were forbidden church communion.

AG'MEN, in the Roman art of war, denoted an army, or rather a part of it, in march, thus we read of the *primum agmen*, or van-guard; *medium agmen*, or main body; and the *postremum agmen*, or rear-guard.

AG'NATE, any male relation by the father's side.

AGNA'TION, the relationship subsisting between the descendants of the same man, in the male line.

AGNŒ'TÆ, in church history, a sect of heretics, in the sixth century, who maintained that Christ, with respect to his human nature, was ignorant of many things, and particularly of the day of judgment.

AGNO'MEN, in Roman antiquity, was the fourth or honorary name bestowed on account of some extraordinary action, virtue, or accomplishment. Thus the agnomen *Africanus* was given to Publius Cornelius Scipio, on account of his exploits in Africa.

AG'NUS DE'I, the Lamb of God. A prayer of the Romish liturgy, beginning with those words. Also, a round piece of wax, on which is impressed the figure of the sacred Lamb, and which is consecrated by the pope with great solemnity.

A'GON, in the public games of the ancients, a term used indifferently for any contest or dispute, whether respecting bodily exercises, or accomplishments of the mind. Thus poets, musicians, &c., had their *agones*, as well as the athletæ.——Agon was also used for one of the ministers employed in the heathen sacrifices, whose business it was to strike the victim.

AGONA'LIA, festivals in Rome, celebrated in honour of Janus, or Agonius, three times a year.

AGONOTHE'TÆ, officers appointed at the Grecian games to take care that all things were performed according to custom, to decide controversies amongst the antagonists, and adjudge the prizes.

AGO'NIA, among physicians, a struggle as between life and death.

AGONISTICUM, in medicine, an application of excessively cold water in cases of fever.

AGORANO'MUS, in Grecian antiquity, a magistrate of Athens who had the regulation of weights and measures, of the prices of provisions, &c.

AGORÆ'US, an appellation given to such deities as had statues in the market-places.——Agoræus was also a term for very coarse bread.

AGRA'RIÆ NA'VES, in ancient history, vessels which were placed to keep watch or guard.

AGRA'RIÆ STATIO'NES, in the ancient military art, corps of guards posted in the fields.

AGRARIAN LAWS, statutes, which forbid the possession of more than a certain extent of land by any single individual. That law of the Romans, called, by way of eminence, *the agrarian law*, was published by Spurius Cassius, about the year of Rome, 268, enjoining a division of the conquered lands, in equal parts, among the citizens, and limiting the number of acres that each might enjoy.

AGREE'MENT, in law, signifies the consent of two or more persons to any thing done, or to be done.

A'GREMORE, a term used by the artificers in a laboratory for the charcoal when in a state fitted for the making of powder.

AG'RICULTURE, in a general sense, denotes the art of rendering the earth fertile, by tillage and culture. Its theory includes the nature and properties of land, the different sorts of plants fitted for it, and the rotation of crops. The practical part comprehends the labours of husbandry, with the implements and animals appertaining thereto. Since the revival of the arts, the science of agriculture has been zealously cultivated by the higher orders. The writers likewise on this subject have within the last century been more numerous than at any former period; and every effort has been made by experiments, inventions, and improvements, to render the land productive. Nor can this be a matter of wonder, since it is the most important science to which the human intellect can be directed, alike interesting all nations and all ages, and spreading an influence over the whole circle of our wants, comforts, pleasures, luxuries, arts, and commerce. It is the basis of all other arts, and in all countries coeval with the first dawn of civilization. It is not only indispensable to national prosperity, but is eminently conducive to the welfare of those who are engaged in it. It gives health to the body, energy to the mind, is favourable to virtuous and temperate habits, and to purity of moral character. In the energetic language of Dr. Johnson, we may truly say, that "though mines of gold and silver should be exhausted, and the species made of them lost; though diamonds and pearls should remain concealed in the bowels of the earth and the womb of the sea; though commerce with strangers be prohibited; though all arts, which have no other object than splendour and embellishment, should be abolished; yet the fertility of the earth alone would afford an abundant supply for the occasions of an industrious people, by furnishing subsistence for them, and such armies as should be mustered in their defence. We, therefore, ought not to be surprised that agriculture was in so much honour among the ancients; for it ought rather to seem wonderful that it should ever cease to be so, and that the most necessary and most indispensable of all professions should have fallen into any contempt." It must not, however, be forgotten, that the husbandmen of antiquity, as well as those of the middle ages, were destitute of many advantages enjoyed by the modern cultivator. Neither the practical nor the theoretical agriculturists of those periods had any correct knowledge of geology, mineralogy, chemistry, botany, vegetable physiology, or natural philosophy; but these sciences have given the modern husbandman the command of important agents, elements, and principles, of which the ancients had no idea. Nature's most simple modes of operation were to them inexplicable, and their ignorance of causes often led to erro-

neous calculations with regard to effects. To modern science we are indebted, among numerous other advantages, for the knowledge and means of chemically analyzing soils, by which we can ascertain their constituent parts, and thus learn what substances are wanted to increase their fertility; for immense improvements in the implements used in husbandry; and for the art of breeding the best animals and obtaining the most nutritive vegetables, by a judicious selection of individuals and species to propagate from. These, and many other things of nearly equal importance, have rendered the agriculture of the present period infinitely superior to that of the middle ages, and even greatly surpassing the degree of perfection it had attained during the days of Roman greatness.

AGRIO'NIA, a Grecian nocturnal festival, annually celebrated by the Bœotians in honour of Bacchus.

AGRO'TERA, an annual sacrifice at Athens in honour of Diana.

AGROUND', a term applied to a ship when any part of it rests on the ground so as to render it immoveable.

AGRYP'NIA, among physicians, a privation of sleep; a troublesome symptom of nervous and febrile diseases.

A'GUE, a general name for all periodical fevers, which, according to the different times of the return of the feverish paroxysm, or fit, are denominated quotidian, tertian, or quartan agues. They occur chiefly in situations where there are shallow, stagnant waters.

A'GUTI, or Long-eared Cavy, an American animal, very much resembling a guinea-pig. They live on vegetables, inhabit hollow trees, and burrow in the ground.

AHEAD', in naval language, signifies, farther on than the ship, in opposition to *astern*, or behind the ship.

A-HULL', a term for a ship when all her sails are furled, and she lies with her helm lashed on the lee-side.

AID, in a general sense, denotes any kind of assistance given by one person to another.——Aid (*auxilium*), in feudal times, a subsidy paid by vassals to their lords on certain occasions.

AID'-DE-CAMP, an officer that laways attends on each of the generals in his camp, to receive and carry orders.

AIGUI'LLE, an instrument used by engineers to pierce a rock for the lodgment of powder as in a mine.

AILAN'THUS, a Chinese tree, called the tree of heaven, on account of its lofty growth; it rises with a straight trunk 40 or 50 feet high.

AIR, a subtile, invisible, elastic fluid, surrounding our globe, and supposed to reach about 40 miles above the earth's surface. It is the great laboratory in which most of the actions of life go on, and on the composition of which they depend, for every alteration it undergoes must induce some great change on the animal machine. The different degrees of heat and elasticity in the air must have effects proportionable to the causes upon the bodies of animals. The various contents also of the air must of course induce great changes, as it some way or other finds means to communicate the qualities it borrows from them to the blood and juices of animals. Hence it becomes the vehicle of contagion, and the propagator of diseases, both epidemical and endemial, which admit of infinite variety, because the alterations of the air, with respect to its properties, and to the innumerable combinations of bodies contained in it, are infinite. Lord Bacon thinks the best air is to be met with in open champaign countries; where the soil is dry, not parched or sandy, and spontaneously produces wild thyme, wild marjoram, and the like sweet-scented plants. That near rivers he thinks rather prejudicial, unless they are small, clear, and have a gravelly channel. The morning air is deemed more refreshing than that of the evening, and air agitated with breezes, than that which is serene and still. Though invisible, except in large masses, without smell or taste, yet it is a substance possessing all the principal attributes of matter; it is impenetrable, ponderable, compressible, dilatable, perfectly elastic, and its particles are operated on like those of other bodies, by chemical action. It is indispensable to the life of all organic beings; it is the agent of combustion; devolves heat and light; and is the principal medium of sounds.——In the elegant fables of the Greeks, Air was personified under the names of Jupiter and Juno. Jupiter was said to reign in the upper atmosphere, and Juno in the lower. The air is sometimes, also, represented as a divinity, whose wife is the moon, and whose daughter the dew.——Air, in music, is properly the tune which is adapted to the words of a song, or piece of poetry intended to be sung; and, by the extension of the term, the song itself is called an *air*. In operas, the name of *air* is given to all measured music, to distinguish it from the recitative; and, generally, to every piece of music, whether vocal or instrumental, which has its beginning and end.——Arietta signifies a short, less elaborate air, designed to express a more simple and transient emotion.

AIR-BLADDER, or the Swimming-bladder, a vehicle found in the bodies of all fishes; the cartilaginous, cetaceous, and perhaps a few other kinds excepted. By this bladder, which is always more or less replete with air, the fish is enabled to sustain its body at any depth. Near the bottom, the great weight of the incumbent water compresses the body of the fish, or rather the inclosed air-bladder, till it becomes equiponderant with an equal bulk of water. In the middle region, where the pressure is less, the air-bladder expands; and thereby increases the bulk of the fish, without idding anything to its weight, till it becomes equiponderant with an equal bulk of water. As the fish continues to rise, the air-bladder still expands and sus-

AIR PIPES ARE A RECENT INVENTION FOR THE VENTILATION OF SHIPS, BY MEANS OF THE RAREFYING POWER OF HEAT.

AIR TRUNKS ARE A RECENT INVENTION FOR PREVENTING THE STAGNATION OF FUTRID EFFLUVIA IN JAILS, OR CROWDED APARTMENTS.

tains it; thus, according to the different degrees of contraction and dilatation of this bladder, they can keep higher or lower in the water at pleasure.

AIR'-GUN, a gun constructed so as to propel bullets solely by means of condensed air; which is effected without causing any explosion.

AIR'-JACKET, a sort of jacket made of leather, in which are several bags or bladders, containing air. By the help of these bladders, which are placed near the breast, a person is supported in the water, without making the efforts used in swimming.

AIR'-PUMP, a machine for exhausting the air out of vessels, in the same manner as water is drawn up by a pump. The operation of this machine depends on the elasticity of the air: for, by working the pump, the air in the receiver will expand itself; by which means part of it will be forced into the barrel of the pump, to be carried off. By thus continuing to work the pump, the air in the receiver will be gradually exhausted; but can never be wholly drawn out, so as to leave a perfect vacuum within the vessel; for it must be considered, that the air which is exhausted, is only pushed out by the spring of that which remains behind; if, therefore, every particle were supposed to be exhausted, the last would be expelled without an agent; or there would be an effect without a cause.

AIR'-SHAFTS, in mining, holes or shafts let down from the open air, to discharge the foul air or gases.

AIR'-THREADS, in natural history, the long filaments seen floating in the air at the autumnal season of the year. These threads are the work of spiders, especially of that species called the long-legged field-spider. This animal, having gained the summit of a bush or tree, darts from its tail several of these threads, till at length it produces one capable of sustaining it in the air: on this it mounts in quest of prey, and frequently rises to considerable heights.

AIR'-VESSELS, spiral ducts or canals in the leaves and other parts of plants, which are supposed to supply them with air, after the manner of lungs in animals. ——In navigation, the term AIR-VESSELS has been applied to a late invention for rendering life-boats of more service, and ships in general more safe. It consists of a set of tube-formed air-vessels carried round the planking.

AIR-LAMP, a pneumatic machine, formed by the combination of inflammable air and electricity to produce a flame, which by means of a stop-cock, may be repressed or continued at pleasure.

A'JUTAGE, or AD'JUTAGE, in hydraulics, part of the apparatus of a *jet d'eau*, or artificial fountain; being a kind of tube fitted to the aperture or mouth of the cistern, or the pipe; through which the water is to be played in any direction.

AL, an Arabian particle, answering to the English *the*, and employed in the same manner to mark any thing definitely.

A'LA, or A'LÆ, in ancient military affairs, the wings of an army, or the horse on each side flanking the foot.

AL'ABASTER, a well-known sulphate of lime, forming a soft, granular, imperfectly transparent, marble; used for ornaments in houses, and by statuaries. It is found in Germany, France, and Italy.—— ALABASTER, in antiquity, a term not only used for a box of precious ointment, but also for a liquid measure, containing ten ounces of wine, or nine of oil.

ALABAS'TRA, in plants, are those little herbaceous leaves which encompass the bottoms of flowers, particularly the rose.

ALABAS'TRUM DENDROIDE, the name of a species of laminated alabaster, beautifully variegated with the figures of trees, shrubs, &c.

ALA'NA TERRA, the *ochra ferri* of Linnæus, or red ochre, supposed to be what the ancients called *Samius lapis*, the Samian stone.

ALA'RES, in Roman antiquity, an epithet given to the cavalry, on account of their being placed in the two wings, or alæ, of the army.

ALA'RAT, according to the Mahometan creed, the party-wall which separates heaven from hell.

ALAR'UM, any contrivance for the purpose of *alarm*. A bell, or rattle, to call assistance. A bell fastened to, or communicating with, a door or window.

ALB, or ALBE, (*alba*), in the Romish church, a vestment of white linen, hanging down to their feet, and answering to the surplice of our clergy. In the ancient church, it was usual with those newly baptized, to wear an alb, or white vestment; and hence the Sunday after Easter was called *dominica in albis*, on account of the albs worn by those baptized on Easter-day.

AL'BATROSS, or Man-of-War Bird, the *Diomedes* of Linnæus, a large and voracious bird, which inhabits many countries between the tropics.

ALBIGEN'SES, a name common to several sects, particularly the Cathari and Waldenses, who agreed in opposing the dominion of the Romish hierarchy, and endeavouring to restore the simplicity of primitive Christianity. They endured the severest persecutions, and after the middle of the 13th century, the name of Albigenses altogether disappeared; but fugitives of their party formed, in the mountains of Piedmont and in Lombardy, what is called the *French Church*, which was continued through the Waldenses, to the era of the Reformation.

ALBI'NOS, or LEUCÆ'THIOPS, a variety of the human species, that frequently occurs in Africa. The Portuguese first gave the name of Albino to the white negro, and they formerly described them as a distinct race; but modern naturalists have discovered them in various countries of Europe, viz. in Switzerland, among the Savoyards in the valley of Chamouni; in France, in the tract of the Rhine; in Tyrol, &c. Their characteristics are now said to

TO ESTIMATE THE QUANTITY OF ALCOHOL IN ANY SPIRIT, THE SPECIFIC GRAVITY OF THE ALCOHOL AND WATER SHOULD BE ASCERTAINED.

be owing to a disease which may attack men in every climate, and to which even certain animals are subject. Their skin has a dull white or cadaverous appearance; the iris of the eye is of a bright red, or of a blue colour; and the hair is either white and silky, or of a very flaxen colour. When this variety is found among the negroes, the woolly excrescence which covers the heads of that race is white.

AL'BULA, mineral waters of an aluminous kind; hence of an astringent quality, and of use in wounds.

ALBU'GO, a disease of the eye, which consists of a white speck.

AL'BUM, a white table or register, whereon the Roman prætors had their decrees written. There were many of them in use, and they received their appellations from the various magistrates whose names were thereon entered; as the *album judicum*, the *album decurionum*, &c.——The fashionable ALBUMS of the present day are derived from the practice adopted in many foreign countries of having a white paper book, in which strangers of distinction or literary eminence were invited to insert their names, or any observation in prose or verse, as a memorial of their visit.

ALBU'MEN, a white or transparent viscous fluid, without taste or smell, which is the substance of the nerves; the serous part of the blood; and the white of eggs, and of milk.

ALBUR'NUM, the soft white substance between the inner bark and the wood of shrubs and trees.

ALCA'ICS, a term given to several kinds of verse, from their inventor, the poet Alcæus.

AL'CAIDE, or AL'CALDE, a Spanish or Portuguese magistrate, or officer of justice, answering nearly to the French prevost, and the British justice of peace. Both the name and office are of Moorish origin.

AL'CHEMY, or AL'CHYMY, that obsolete branch of chemistry which had for its object the transmutation of metals into gold; the finding the panacea, or universal remedy; and other things equally ridiculous in the eyes of philosophers of a more enlightened age. Though designing men have often used alchymy as a means of defrauding the credulous of their money, many have laboured in the fruitless search with indefatigable patience and purity of heart; and various discoveries of real value to science have been the accidental results of their labours.

AL'COHOL, an Arabian word, signifying any thing reduced into thin parts, or rendered extremely subtile by distillation. The word, at present, is used for a highly rectified spirit. This preparation is extremely light and inflammable: it is colourless and transparent, appearing to the eye like pure water. To the palate it is exceedingly hot and burning: but without any peculiar taste. It is chiefly employed in preparing varnishes, and dissolving gums, resins, &c. Its antiseptic power makes it also useful in preserving anatomical preparations. [Much valuable information respecting the nature, properties and methods for procuring and concentrating alcohol, together with various alcoholmetrical tables, will be found on referring to Dr. Ure's Dictionary of Arts.]

ALCOHOLIZA'TION, the process of rectifying any spirit, or reducing it to a perfect alcohol.

AL'COR, a small star, adjoining the bright one in the middle of the tail of Ursa Major.

AL'CORAN, or the KORAN, the name of the volume containing the revelations, doctrines, and precepts of Mahomet, in which his followers place implicit confidence. The general aim of the Alcoran was to unite the professors of the three different religions then followed in Arabia, Idolaters, Jews, and Christians, in the knowledge and worship of one God, under the sanction of certain laws, and the outward signs of ceremonies, partly of ancient, and partly of novel institution, enforced by the consideration of rewards and punishments, both temporal and eternal, and to bring all to the obedience of Mahomet, as the prophet and ambassador of God, who was to establish the true religion on earth. [The reader has an easy opportunity of gratifying his curiosity with regard to the doctrines of the Koran, by consulting an English translation of that work by G. Sale.]

ALCYO'NIUM, in botany, a genus of submarine plants, consisting of a rigid fibrous substance, disposed in various forms, and sometimes coated over with a crust of a similar but more compact matter than the rest.

ALDEBA'RAN, a star of the first magnitude, vulgarly called the Bull's Eye, as making the eye of the constellation Taurus.

AL'DER, the *betula alnus*, of Linnæus, a tree which thrives particularly in moist places. The principal sorts of alder are the round leaved, or common alder, the long-leaved, and the dwarf alder.

AL'DERMAN, a magistrate next in authority to the mayor, in a city or borough. Their number is not limited, but differs according to the magnitude of the place, where they exercise the authority of commissioners of the peace. In London, their number is twenty-six; each having a ward, or district of the city committed to his more peculiar care; but, serving by rotation, as sitting magistrate for the whole.——ALDERMAN, among our Saxon ancestors, was a degree of nobility, from which is derived the *earl* of the present day.

ALE, a fermented liquor, obtained from an infusion of malt and hops. *Pale ale* is brewed from slightly dried malt, and *brown* from malt highly dried. Ale is thought to be the same kind of liquor with the *cerevisia*, *zythum*, and *carmi* of the ancients.

A'LEA, in antiquity, denotes in general all kinds of games of chance; but, in a more restricted sense, was used for a particular game played with dice and tables, not unlike our backgammon, and wherein

A DEFINITE MIXTURE OF ALCOHOL AND WATER IS INVARIABLE IN ITS VALUE, AND CAN BE ACCURATELY ASCERTAINED BY THE HYDROMETER.

black and white stones were used instead of wooden men.

ALECTOROMAN'TIA, in Grecian antiquity, a species of divination performed by means of a cock, in the following manner: A circle being described on the ground, and divided into twenty-four equal portions, in each of these spaces was written one of the letters of the alphabet, and on each of the letters was laid a grain of wheat; after which a cock being turned loose in the circle, particular notice was taken of the grains picked up by the cock, because the letters under them being formed into a word, made the answer desired.

A-LEE', a sea term, used when the wind, crossing or flanking the line of a ship's course, presses upon the masts and sails so as to make her incline to one side, which is called the lee-side: hence, when the helm is moved over to this side, it is said to be *a-lee*.

ALEM'BIC, a vessel formerly used for distilling; in the place of which retorts are now mostly in use.

ALEU'ROMANCY, a species of divination performed by meal or flour. It is sometimes called alphitomancy and crythomancy.

ALEXAN'DRIAN LIBRARY. This celebrated library was founded by Ptolemy Soter, for the use of an academy that he instituted in Alexandria; and, by continual additions by his successors, became at last the finest library in the world, containing no fewer than 700,000 volumes. The method followed in collecting books for this library, was, to seize all those which were brought into Egypt by Greeks or other foreigners. The books were transcribed in the museum by persons appointed for that purpose, the copies were then delivered to the proprietors, and the originals laid up in the library. It was eventually burnt by order of the caliph Omar, A. D. 624.

ALEXAN'DRIAN MANUSCRIPT, or CODEX ALEXANDRINUS, a famous copy of the Scriptures, consisting of four volumes, in a large quarto size; which contains the whole Bible, in Greek, including the Old and New Testaments, with the Apocrypha, and some smaller pieces, but not quite complete. This manuscript is now preserved in the British Museum. It was sent as a present to king Charles I., from Cyrillus Lucaris, patriarch of Constantinople, by Sir Thomas Rowe, ambassador from England to the grand seignior, about the year 1628.

ALEXAN'DRIAN, or ALEXAN'DRINE, in poetry, a kind of verse, consisting of twelve, or of twelve and thirteen syllables alternately, the pause being always on the sixth syllable. It is so called from a poem on the life of Alexander, written in this way, by some French poet.

AL'GAROTH, POWDER OF, a precipitate obtained by pouring water into the acidulous chloride of antimony.

AL'GÆ, in botany, an order of the cryptogamia class of plants. It is one of the seven families or natural tribes into which the vegetable kingdom is distributed. The plants belonging to this order have their root, leaf, and stem entire. Under this description are comprehended all the seaweeds, and many other aquatic plants.

AL'GEBRA, a species of abstract arithmetic, in which letters are put for any numbers, and any desired operations performed in a short and simple manner. The first letters of the alphabet are generally adopted for known quantities, and the last for unknown, and the operations are performed by characters, as + for addition; − for subtraction; × for multiplication; and ÷ for division; with = for equality. Thus, a, b, c, &c., are commonly put for known quantities: and z, y, x, &c., for unknown or indeterminate quantities: thus if $a + x$ be equal to 9 and a is known to be equal to 4, then $x = 9 - 4 = 5$. Again, if $a + x = 12$, and $a - x = 8$, then by adding the two quantities together I get $2a = 20$ (because there being $+x$ and $-x$ they destroy one another) and $a = \frac{20}{2} = 10$, of course $x = 2$. On such operations as these, extended almost indefinitely, algebra depends, and by them every problem in arithmetic, and almost all in geometry may be solved.

AL'GOL, a fixed star in Caput Medusæ, and marked β in Perseus. This star is subject to periodic variations in its brightness. It changes from the second magnitude to the fourth in about three hours and a half, and back again in the same time; when it continues of the greatest brightness for about two days and seven hours, then it changes again.

AL'GENEB, the name of two fixed stars of the second magnitude; one on the wing of Pegasus, the other on the right shoulder of the constellation Perseus.

AL'GORITHM, a term frequently used to denote the practical rules of algebra, and sometimes for the practice of common arithmetic.

AL'GUAZIL, the title of one of the lower orders of Spanish officers of justice, whose business is to execute the orders of the magistrate.

A'LIAS, in law, a Latin word signifying otherwise; often used in describing the accused, who has assumed other names beside his real one.

AL'IBI, in law, a Latin word signifying, literally, elsewhere. It is used by the accused, when he wishes to prove his innocence, by showing that he was in another place when the act was committed.

ALICON'DA, a tree of immense size, which grows at Congo, on the coast of Africa. It bears a melon-like fruit, which affords pulpy nutritious food, and the bark yields a coarse thread, with which the Africans weave a kind of cloth.

A'LIEN, in law, a person born in a foreign country, in contradistinction to a denizen or natural subject. An alien is incapable of inheriting lands in England, till naturalized by an act of parliament. No alien is entitled to vote in the choice of members

IN THE ALEXANDRIAN SCHOOL, CORRECTNESS, PURITY, AND ELEGANCE WERE SUCCESSFULLY CULTIVATED; BUT TRUE GENIUS WAS RARE.

THE LEGISLATION OF A NATION IN REGARD TO ALIENS, IS A CRITERION OF ITS LIBERALITY, AND CONSEQUENTLY OF ITS CIVILIZATION.

of parliament, has a right to enjoy offices, or can be returned on any jury, unless where an alien is party in a cause; and then the jury is composed of an equal number of denizens and aliens.

ALIENA'TION, in law, the act of making a thing another man's: or the altering and transferring the property and possession of lands, tenements, or other things, from one man to another. To alienate, in mortmain, is to make over lands or tenements to a religious community, or other body politic. To alienate in fee, is to sell the fee-simple of any land, or other incorporeal right.

ALI'GNMENT, in naval affairs, a supposed line drawn to preserve a fleet in its just direction.

AL'IMENT, whatever serves as nutriment to animal life. Climate, custom, and the different degrees of want and of civilization, give rise to an innumerable diversity of food and drink, from the repast of a savage to that of an epicure; or from the diet of the carnivorous native of the north to that of the Brahmin, whose appetite is satisfied with vegetables; but all kinds of aliment must contain nutritious substance, which, being extracted by digestion, enters the blood, and effects the repair of the body.

ALIMEN'TARY, in a general sense, is a term applied to whatever belongs to aliment or food.——Alimentary Duct, a name by which some call the intestines, on account of the food passing through them.——Alimentary Law, among the Romans, that whereby children were obliged to maintain their aged parents.

AL'IMONY, in law, the maintenance sued for by a wife, in case of a legal separation from her husband, wherein she is neither chargeable with elopement nor adultery.

ALIP'TA, amongst the Romans, was a slave, whose province it was to anoint his master when he bathed.

AL'IQUANT PARTS, such numbers in arithmetic as will not divide or measure a whole number exactly, as 7, which is the aliquant part of 16.

AL'IQUOT PARTS, such parts of a number as will divide or measure a whole number exactly, as 2 the aliquot part of 4, 3 of 9, and 4 of 16. Aliquot parts must not be confounded with commensurable ones; for though the former be all commensurable, yet these are not always aliquot parts: thus 4 is commensurable with 6, but is not an aliquot part of it.

ALI'TES, in Roman antiquity, a designation given to such birds as afforded matter for auguries by their flight; in which sense, they are contradistinguished from those called *oscines*, or those which gave auguries by singing or croaking.

AL'KA, in ornithology, a bird of the anseres, or goose-kind, about the size of a duck, and quite black, except on the breast and belly, which are white: it is commonly called the awk or razor-bill.

AL'KAHEST, an universal menstruum possessing the virtue of pervading every substance, and capable of resolving all bodies into their *ens primum*, or first matter. It is explained by Van Helmont to signify a salt of the highest sort, that had attained to the highest state of purity and subtilty.

AL'KALI, among chemists and physicians, an appellation given to all substances which excite a fermentation when mixed with acids. Originally the term alkali signified only the salt extracted from the ashes of kali or glass-wort; afterwards, it was used for the salts of all plants, extracted in the same manner; and as these were observed to ferment with acids, the signification of the term was still farther extended, so as to comprehend whatever substances had this effect. Potash is called the *vegetable alkali*, because it is procured from the ashes of all vegetables, in a greater or less proportion, except marine plants, and a few that grow near the sea-shore, which yield soda. This latter is termed the *mineral alkali*, because it is not only obtained from the ashes of the last-mentioned plants, but is sometimes found native in the earth. Ammonia, or the *volatile alkali*, is procured by decomposition, from all animal, and from some vegetable substances; and by putrefaction from all these matters. It is distinguished from the fixed alkalies by its volatility, which is so great that it very easily assumes a gaseous form, and is dissipated by a very moderate degree of heat; and by its pungent smell. Its purest form is that of a gas: it is never solid, unless combined with some other substances; nor liquid but when it is united with water. It is weaker in all its affinities than the fixed alkalies; and is composed of hydrogen and azote, in the proportion of 193 parts of the former to 807 of the latter.

ALKAKEN'GI, or Winter Cherry, the fruit of which is a species of nightshade.——Alkakengi, in medicine, is used as an abstergent, dissolvent, and diuretic, and is celebrated for its lithotriptic quality.

ALKALIM'ETER, a scientific instrument invented by Descroizelles to measure the purity of different alkalies.

AL'KALINE, in a general sense, is applied to all such things as have the properties of an alkali.

ALKALIZA'TION, the impregnating a liquor with alkaline salts.

AL'KANET, the bark of a root used in dyeing; also for the colouring of oils, in compositions for giving colour to mahogany furniture, and other purposes. It imparts a fine deep-red colour to all unctuous substances and to spirits of wine; but it tinges water with a dull, brownish hue. It is chiefly imported from the Levant, and the plant is a species of bugloss.

ALKER'MES, in pharmacy, a compound cordial medicine, of the form and consistence of a confection.

AL'LAH, the Arabian name of God.

ALLE'GIANCE, in law, the faithful obedience which every subject owes to his prince; being the tie or bond of fidelity

which binds the governed to the governor. The oath of allegiance is that which every person is required to take before he enters on any office.

ALLEMAN'NIC, in a general sense, depotes any thing belonging to the ancient Germans. Thus we meet with Allemannic history, Allemannic language, Allemannic law, &c.

AL'LEGORY, a series or chain of metaphors continued through a whole discourse. The great source of allegory, or allegorical interpretations, is some difficulty, or absurdity, in the literal and obvious sense.

AL'LEGRO, an Italian word used in music, to denote that the part is to be played in a brisk and sprightly manner. The usual distinctions succeed each other in the following order: *grave, adagio, largo, vivace, allegro, presto.* Allegro time may be heightened, as *allegro assai* and *allegrissimo*, very lively; or lessened, as *allegretto* or *poco allegro*, a little lively. *Piu allegro* is a direction to play or sing a little quicker.

ALL-HAL'LOWS, or ALL-SAINTS, a festival observed by many denominations of Christians, in commemoration of the saints in general. It is kept on the first of November, Gregory IV. having in 835 appointed that day for its celebration.

ALLI'ANCE, in the civil and canon law, the relation contracted between two persons or two families by marriage.——ALLIANCE is also used for a treaty entered into by sovereign princes and states, for their mutual safety and defence.——ALLIANCE, in a figurative sense, is applied to any kind of union or connection: thus we say, there is an alliance between the church and the state.

ALLIGA'TION, a rule in arithmetic, teaching how to compound several ingredients for any design proposed. It is either medial or alternate. The former shows the rate or price of any mixture, when its several quantities and their rates are known. The latter is the method of finding the quantities of ingredients necessary to form a compound of a given rate.

AL'LIGATOR, an amphibious animal, so nearly resembling the crocodile of the Nile as to be considered a mere variety. It abounds in the torrid zone, will sometimes grow to the length of 18 or 20 feet, and is covered by a dense hardness of horny scales, impenetrable in most parts to a musket-ball.

ALLITERA'TION, a figure or embellishment of speech, which consists in the repetition of the same consonants, or of syllables of the same sound, in one sentence. The Greek and Roman literature afford many instances of this; and in English poetry there are also many beautiful specimens of alliterations; though it must be confessed that it is too often used without the requisite skill, and carried too far. In burlesque poetry it is frequently used with excellent effect; though even there the sense should never be sacrificed to the sound. Tastefully used, it is a most enchanting ornament, and will equally contribute to softness, to energy, and to solemnity.

ALLO'DIAL LANDS, are those which, under the feudal system, were free. Their owners owed no service to a superior lord.

AL'LOPHANE, a mineral, or aluminous earth, of a blue, and sometimes of a green or brown colour, which occurs massive, or in imitative shapes. It gelatinizes in acids.

ALLOY', a proportion of any baser metal mixed with one that is finer; thus the gold coin has an alloy of silver and copper, as silver has of copper alone. Alloy also means any compound of any two or more metals whatever; thus, bronze is an alloy of copper and tin; brass, an alloy of copper and zinc, &c. One metal however, does not alloy indifferently with every other metal, but it is governed in this respect by peculiar affinities.

ALL'SPICE, so called from its flavour, which unites that of the cinnamon, of the nutmeg, and of the clove, is the *pimenta*, or Jamaica pepper.

ALLU'VIAL, a term used by mineralogical and geological writers. By alluvial depositions is meant the soil which has been formed by the destruction of mountains, and the washing down of their particles by torrents of water. The alluvial formations constitute the great mass of the earth's surface.

ALLU'VION, in law, a gradual increase of land along the sea-shore, or on the banks of rivers. This, when slow and imperceptible, is deemed a lawful means of acquisition; but when a considerable portion of land is torn away at once, by the violence of the current, and joined to a neighbouring estate, it may be claimed again by the former owner.

ALMACAN'TAR, in astronomy, a name for the parallels of altitude on the celestial globe, whose zenith is the pole or vertical point.——ALMACANTAR'S STAFF is an instrument for observing at sea the sun's amplitude rising and setting.

AL'MADIE, a kind of canoe, or small vessel, about four fathoms long, usually made of bark, and used by the negroes of Africa.

AL'MAGEST, the name of a celebrated book, composed by Ptolemy; being a collection of many of the observations and problems of the ancients, relating both to geometry and astronomy.

AL'MAGRA, a fine deep-red ochre, with a faint admixture of purple, used both in painting and medicine.

AL'MA MA'TER, a title given to the universities of Oxford and Cambridge by their several members who have passed their degrees in either of these universities.

AL'MANAC, a calendar or table, containing a list of the months, weeks, and days of the year, with an account of the rising and setting of the sun and moon, the most remarkable phenomena of the heavenly bodies, the several festivals and fasts, and other incidental matters.——The NAUTICAL ALMANAC, a most valuable work for

IRONY IS DISTINGUISHED FROM ALLEGORY BY CONVEYING A MEANING DIRECTLY CONTRARY TO THE TRUE SIGNIFICATION OF THE WORDS.

WHOLE POEMS ARE SOMETIMES ALLEGORICAL; AS "SPENSER'S FAIRY QUEEN," AND "BUNYAN'S PILGRIM'S PROGRESS."

mariners, is published in England two or three years in advance. It was commenced in 1767, by Dr. Maskelyne, the astronomer royal, and has been regularly continued ever since.

AL'MONER, an ecclesiastical officer of the king, appointed to distribute the king's alms to the poor every day.

ALMS, a general term for what is given out of charity to the poor. In the early ages of Christianity, the alms of the charitable were divided into four parts, one of which was allotted to the bishop, another to the priests, and a third to the deacons and sub-deacons, which made their whole subsistence; the fourth part was employed in relieving the poor, and in repairing the churches.

ALMS'-HOUSE, a building erected for the maintenance of a certain number of poor, aged, or disabled persons. Of these there are a great number in London, Westminster, and other towns of note in England; some endowed by public companies, and others by charitable individuals.

ALMU'TEN, in astrology, the lord of a figure, or strongest planet in a nativity.

A'LOA, in Grecian antiquity, a festival kept in honour of Ceres, by the husbandmen, and supposed to resemble our harvest-home.

AL'OE, a tree which originally came from India, remarkable for a bitter juice, called aloes, which is extracted from its leaves, and is very useful in medicine as a purgative. The Socotrine aloe, the leaves of which afford a beautiful violet colour, is an European species much cultivated in Spain. Aloes are an extensive tribe of plants; and while some of them are not more than a few inches in height, others occasionally exceed thirty feet. All the leaves are fleshy, thick, and more or less spinous at the edges or extremity. The great American aloe *(agave Americana)*, when in full flower, presents a most splendid appearance. The stem, which bears the blossoms, rises from the centre of the leaves, branching out on all sides in such a manner as to form a kind of pyramid, composed of greenish-yellow flowers, which stand erect, and are seen in thick clusters at every joint. It is an erroneous notion, though a very generally received one, to suppose that the American aloe does not bloom till it is 100 years old; the fact is, in hot countries it will flower in a few years; but in colder climates, the growth being slower, it is necessarily longer in arriving at maturity.

ALOET'ICS, a general term for all medicines, the basis or principal ingredient of which is aloes.

ALOGOTRO'PHIA, in medicine, unequal growth or nutrition in different parts of the body.

ALOPE'CIA, in medicine, a falling off of the hair, occasioned either by a defect of nourishment, or by a bad state of the humours.

AL'PHABET, the natural or customary series of the several letters of a language. The word is formed from *alpha* and *beta*, the first and second letters of the Greek alphabet. It is undoubtedly the most important of all inventions, for by means of it sounds are represented, and language made visible to the eye by a few simple characters. The five books of Moses are universally acknowledged to be the most ancient compositions, as well as the most early specimens of alphabetical writing extant; and it appears that all the languages in use amongst men which have been conveyed in alphabetical characters, have been the languages of people connected, ultimately or immediately, with the Hebrews. Hence a most extensive controversy has existed amongst learned men, whether the method of expressing our ideas by visible symbols, called letters, be really a human invention; or whether we ought to attribute an art so exceedingly useful, to an immediate intimation of the Deity. An opinion upon such a subject would necessarily be mere conjecture, and therefore useless; but we feel that we could not properly pass over in silence a matter which has so often engaged the attention of the most erudite controversialists.

ALPHON'SINE TABLES, astronomical tables made in the reign of Alphonsus X., king of Arragon, who was a great lover of science, and a prince of rare attainments; but though these tables bear his name, they were chiefly drawn up by Isaac Hazan, a learned Jewish rabbi.

ALT, in music, that part of the great scale lying between F above the treble cliff note, and G in *altissimo*.

AL'TAR, a place upon which sacrifices were anciently offered to the Almighty, or some heathen deity. Before temples were in use, altars were erected sometimes in groves, sometimes in the highways, and sometimes on the tops of mountains; and it was a custom to engrave upon them the name, proper ensign, or character of the deity to whom they were consecrated. Thus St. Paul observed an altar at Athens, with an inscription, *To the unknown God*. In the great temples of ancient Rome, there were ordinarily three altars; the first was placed in the sanctuary, at the foot of the statue of the divinity, upon which incense was burnt and libations offered; the second was before the gate of the temple, and upon it they sacrificed the victims; and the third was a portable altar, upon which were placed the offerings and the sacred vessels. The principal altars of the Jews were those of *incense*, of *burnt-offerings*, and the *altar*, or *table*, for the *shew-bread*.——ALTAR is also used among Christians, for the communion-table.

AL'TARAGE, the profits arising to a priest on account of the altar, as well as the offerings themselves made upon it.

AL'TERATIVES, such medicines as induce a favourable change in the system, without any manifest operation or evacuation.

ALTERNA'TION, a rule in arithmetic, by which the changes in any number of things may be determined. It consists of

multiplying the numbers one into another, and the product is the number of possible changes.

ALTHÆ'A, a plant, the root of which abounds with a mild mucilage, and is of great efficacy in medicine as an emollient. It is well known by its English name, the Marsh-mallow.

AL'TIMETRY, the art of taking heights by means of a quadrant, and founded on the principle that the sides of triangles having equal angles, are in exact proportion to one another.

ALTIS'SIMO, in music, an Italian epithet for notes above F in alt.

ALTIS'TA, in music, an Italian name for the vocal performer who takes the *alto primo* part.

AL'TITUDE, the height of an object, or its elevation above that plane to which the base is referred; thus in mathematics, the altitude of a figure is the perpendicular or nearest distance of its vertex from the base. The altitude of an object is the elevation of an object above the plane of the horizon. or a perpendicular let fall to that plane. ——Accessible Altitude of an object, is that to whose base there is access, to measure the nearest distance to it on the ground, from any place.——Inaccessible Altitude of an object, is that to whose base there is not free access, by which a distance may be measured to it, by reason of some impediment, such as water, wood, or the like. The instruments mostly used in measuring altitudes, are the quadrant, theodolite, geometrical square line of shadows, &c.——Altitude of the Eye, in perspective, the perpendicular height of the eye above the geometrical plane.——Altitude of a Star, &c., in astronomy, the height of any star, &c. above the horizon, or an arc of a vertical circle, intercepted between the star and the horizon. This altitude is either true or apparent, according as it is reckoned from the rational or sensible horizon, and the difference between these two is termed, by astronomers, the parallax of altitude.——Altitudes of Mountains may be determined either by trigonometry or by the barometer; for as the weight and elasticity of the atmosphere diminish as we rise, so the fall of the barometer determines the elevation of any place. If very great accuracy is not required, their altitude may be ascertained by the length of shadows, moveable staves, &c.

AL'TO, or AL'TO TENO'RE, in music, is the term applied to that part of the great vocal scale which lies between the *mezzo soprano* and the tenor, and which is assigned to the highest natural adult male voice. In scores, it always signifies the counter-tenor part.

AL'TO RELIEV'O, in sculpture, a representation of figures and other objects against a flat surface; differing from *basso relievo* only in the work being much more brought forward.

AL'UM, a fossil, salt, and mineral, of an acid taste, which leaves in the mouth a sweetness, accompanied by considerable astringency. There are two sorts of alum, the natural and the artificial. In a natural state, it is said to be met with in Egypt, Sardinia, Spain, Bohemia, and other places, and the counties of York and Lancaster, in England. On account of its astringent qualities, it is used in several mechanic arts, and in medicine.——Alum Slate, a slaty rock, found abundantly in most European countries, and from it is obtained, by a complicated process, the largest part of the alum of commerce.——Alum Stone, a mineral, of a greyish or yellowish-white colour. It is found at Tolfa, in Italy, and from it is obtained a very pure alum, by simply subjecting it to roasting and lixiviation.

ALU'MINA, an earth which is the basis of clay, basalt, slate, &c. It is of the greatest importance to mankind, for it enters largely into the composition of the best arable land, and is the base of all earthenware and porcelain.

ALU'MINITE, a mineral, of a snow-white colour, dull, and opaque; found chiefly near Halle, in Saxony.

ALU'MINOUS, an appellation given to such things as partake of the nature and properties of alum.

ALVEA'RIUM properly signifies a bee-hive, from *alveus*, a channel, or cavity. Hence, Alvearium, among anatomists, denotes the hollow of the auricle, or outer ear.

AL'VEOLATE, in botany, an epithet applied to the receptacle when it is divided into open cells, like a honey-comb, with a seed lodged in each.

AL'VEOLUS, in natural history, properly denotes one of those waxen cells, whereof the combs in bee-hives consist. ——Alveolus, in anatomy, is the socket-like cavity in the jaws, wherein each of the teeth is fixed.——Alveolus is also the name given to a marine fossil. The *alveoli* are of a conic shape, and composed of a number of cells, like so many bee-hives, jointed into one another, with a siphunculus, or pipe of communication, like that of the nautilus.

AL'VEUS, a boat formed from the trunk of a tree hollowed out, which was in use among the ancients, and in one of which, according to Ovid, Romulus and Remus were exposed.

ALYS'MOS, a term frequently used by Hippocrates to express the restless uneasiness attendant on sickness.

ALYS'SUM, the plant madwort; so called because it was supposed to cure the bite of a mad dog.

AMAL'GAM, or AMAL'GAMA, the mixture of mercury with some other metal. Amalgams are used either to render a metal fit to be spread on some works, as in gilding, or else to reduce it to powder. There are two methods generally used in the making of amalgams. The first is merely by trituration in a mortar, and without heat: the second is by fusing the metal which is to be amalgamated, and by

THE RIVER AMAZON RISES IN THE MOUNTAINS OF QUITO, AND RUNS 3400 MILES BEFORE IT DISCHARGES ITSELF INTO THE ATLANTIC.

adding to it, when fused, the intended quantity of mercury. An amalgam of tin and mercury is used for looking-glasses.

AMALGAMA'TION, the operation of mixing quicksilver with some other metal.

AM'ARANTH, a plant cultivated in the Indies and South America, and famed for the beauty with which the colours are elegantly mixed in its leaves. By ancient poets the amaranth was made the emblem of immortality, in consequence of its flowers retaining their colours after they were plucked and dried.——AMARANTHUS, in the Linnæan system, is a genus of plants, of which there are many varieties.

AMA'RUM, in mineralogy, sulphate of magnesia, or Epsom salts; a genus of mineral substances, class *salts*, of a bitter taste, easily soluble in water, and melting in heat.

AMA'RUS, in mineralogy, a genus of earths, of the class *silices*, consisting of silica, with a small proportion of magnesia, alumina, and carbonate of lime.

AMARYL'LIS, LILY ASPHODEL; a genus of perennial plants, of which there are several species, mostly natives of the East and West Indies.

AMARYN'THIA, festivals anciently celebrated in honour of Diana at Amarynthusa, a village of Eubœa.

AM'ATEUR, a person having a taste for a particular art, yet not professing, nor being dependent on it.

AMATO'RII MUSCULI, in anatomy, a term sometimes used for those muscles of the eyes that draw them sideways, and assist in ogling. The AMATORII MUSCULI are generally called the *obliquus superior*, or *trochlearis*, and the *obliquus inferior*.

AMAURO'SIS, among physicians, a disease of the eye, otherwise called *gutta serena*.

AM'AZONS, a nation of female warriors, who are said to have founded an empire in Asia Minor. According to tradition, supported by the authority of the most ancient Greek writers, they permitted no males to reside among them, but had intercourse with the men of the neighbouring nations merely for the sake of preserving their community. Their male children they either killed or sent back to their fathers, but they brought up the females to war, and burned off the right breast, that this part of the body might not impede them in the use of the bow. It was from this practice that they derived the name of Amazons, *i. e.* wanting a breast. Their existence, however, has not only been controverted, but ridiculed and treated as fabulous, by Dr. Bryant, in his Analysis of Ancient Mythology, and even by some ancient writers. But still there are too many concurrent testimonies in their favour for us to suppose that they were altogether creations of the fancy. The last account we have of them is about 330 years before Christ, when their queen, Thalestris, made a visit to Alexander of Macedon, at the head of 300 of her Amazons, having left the rest of her troops behind.——The old geographers gave the name of AMAZONIA to a large tract of country in the interior of South America, because Orellana, the first discoverer of the country, relates, that as he sailed up the stupendous river Maranon, or Amazon, which inundates and fertilizes the land as the Nile does Egypt, he found on its banks a nation of armed women, who made war on the neighbouring people.

AMBARVA'LIA, a festival among the Romans, celebrated annually in honour of Ceres, in order to procure a plenteous harvest.

AMBAS'SADOR, the representative of one sovereign power to another, to which he is sent properly accredited. Ambassadors are either ordinary or extraordinary. The chief duties of an ordinary ambassador consist in the signing and countersigning of passports, the general protection of trade, and the transmission of such intelligence as can interest his court. Ambassadors extraordinary are sent on some important occasion, and are generally surrounded with superior pomp and splendour; but they quit the country as soon as the affair is despatched. The persons of ambassadors are sacred, both in peace and war: so that according to the law of nations, if hostilities break out between two nations, the respective ambassadors are permitted to depart without molestation.

AM'BER, a hard, brittle, tasteless substance, mostly semitransparent, or opaque, and of a glossy surface. This curious production of nature is inflammable, and, when heated, yields a strong and bituminous odour. Its most extraordinary properties are those of attracting, after it has been exposed to a slight friction, straws, and other surrounding objects; and of producing sparks of fire, visible in the dark. Many thousand years before the science of electricity had entered the mind of man, these surprising qualities were known to exist in amber, and hence the Greeks called it *electrum*. The Romans, supposing it to be a vegetable juice, named it *succinum*; by the Arabs it is denominated *ambra*, whence the French write it *ambre*, and the English *amber*. Several hypotheses have been set up, respecting the nature of amber. By some, it is supposed to be resinous gum, oozing from pines, and falling on the earth, or into the sea; by others, a fossile formed in the earth, and washed ashore by the sea; and, by Dr. Girtanner, an animal product, nearly resembling wax. He relates, that the old pine-forests are inhabited by a large species of ants which form hills of about six feet in diameter, and that it is generally in these ancient forests, or in places where they have been, that fossil amber is found. This substance is not hard, like that taken up on the shores of Prussia: it has the consistence of honey, or of half-melted wax: but it is of a yellow colour, like common amber: it gives the same produce by chemical analysis; and it hardens, like the other, when it is suffered to remain for some time in a solution of common salt. Insects are found in amber; among these,

WHEN JOINED BY THE APURIMAC, THE RIVER AMAZON IS 150 MILES WIDE, AND IT IS FORTY FATHOMS DEEP 1500 MILES FROM THE SEA.

ants are always the most general; circumstances that undoubtedly support Dr. Girtanner's opinion.

AM'BERGRIS, a solid, opaque, ash-coloured inflammable substance, variegated like marble, remarkably light, and when heated emitting a fragrant odour. It is found floating in the sea, near the coast of various tropical countries; and is supposed to be the excrement of the spermatic whale, having frequently been met with in the intestines of that fish. It is very much admired in Asia and Africa, where it is made use of to flavour luxurious dishes: in Europe, it is highly valued as an article of perfumery.

AM'BIDEXTER, a person who can use both hands with equal facility, and for the same purposes that the generality of people do their right hands.——In law, a juror who takes money for giving his verdict.

AMBIEG'NÆ OVES, in the heathen sacrifices, an appellation given to such ewes as, having brought forth twins, were sacrificed together with their two lambs, one on each side. We find them mentioned among other sacrifices to Juno.

AM'BIENT, a term used for such bodies, especially fluids, as encompass others on all sides: thus, the air is frequently called an ambient fluid, in consequence of being diffused round all terrestrial bodies.

AMBI''GENAL HYPERBOLA, in mathematics, a name given by Sir Isaac Newton to one of the triple hyperbolas of the second order.

AM'BIT OF A FIGURE, in mathematics, the perimeter, or the sum of the lines by which the figure is bounded.

AM'BITUS, in Roman antiquity, the act of setting up for some magistracy, or office, and formally going round the city to solicit the interest and votes of the people.——AMBITUS, in music, signifies the particular extent of each tone, or modification of grave and sharp.

AMBLIG'ONAL, in geometry, an epithet for a figure that contains an obtuse angle.

AMBLYG'ONITE, a pale-green mineral, marked superficially with reddish and dark yellow spots.

AM'BLYGON, in geometry, an obtuse-angled triangle.

AMBLYO'PIA, in medicine, a term for dimness of sight.

AMBRO'SIA, in heathen antiquity, denotes the food of the gods. Hence, whatever is very gratifying to the taste or smell has been termed *ambrosial*.——Also, the name of a small shrub, which has a grateful smell and a very astringent taste.

AM'BRY, a place in which are deposited all utensils necessary for house-keeping. In the ancient abbeys and priories there was an office under this denomination, wherein were laid up all charities for the poor.

AMBUBA'IÆ, in Roman antiquity, were immodest women, who came from Syria to Rome, where they appeared as minstrels, and lived by prostitution.

AM'BULON, a tree, the fruit of which is very small and sweet.

AMBUR'BIUM, or AMBUR'VIA, in Roman antiquity, a solemn procession made by the Romans round the city, in which they led a victim, and afterwards sacrificed it, in order to avert some calamity that threatened the city.

AMBUSCA'DE, or AM'BUSH, in the military art, properly denotes a place where soldiers may lie concealed, till they find an opportunity to surprise the enemy. These words are also applied literally and metaphorically to any mode of concealment adopted for the purpose of stratagem.

AMEN', in Scripture language, a solemn formula, or conclusion to all prayer, signifying *verily*, or *so be it*.

AMENDE HONORABLE, (French), an infamous kind of punishment formerly inflicted in France on traitors, parricides, or sacrilegious persons, who were to go naked to the shirt, with a torch in their hand, and a rope about their neck, into a church or a court, to beg pardon of God, the court, and the injured party.——The modern acceptation of the term indicates that an open apology is made for an offence or injury done.

AMENTA'CEÆ, a natural order of plants, bearing catkins; as the poplar, hazel, beech, &c.

AMER'CEMENT, a pecuniary punishment imposed on offenders at the mercy of the court. Amercements differ from fines, inasmuch as the latter are defined, and the former are proportioned to the fault, or more properly at the discretion of the court. The statute of Magna Charta ordains, that a freeman is not to be amerced for a small fault, but in proportion to the offence, by his peers and equals.

AMER'ICANISM, any word or phrase in general use among the inhabitants of the United States, which deviates from the English standard. Of these, a great proportion are mere vulgarisms and technical words of local character, originally taken from different counties in England, by the first emigrants—to whom also that drawling nasal pronunciation may be attributed; others are words formerly used by the English writers, but which have become obsolete; while many are of modern coinage, and owe their origin to the caprice or affectation of their transatlantic inventors, who seem to delight in the use of extravagant and far-fetched terms and metaphors. But every living language is subject to continual changes; and it is not to be expected that a large community, in a state of social and political activity, who are daily developing new and characteristic features, will fail to exercise their share of influence upon that which they naturally consider as a part of their inheritance. Indeed, although these idiomatic infringements on the purity of our language deserve, and have incurred, severe reprehension, both from English and American critics, and the lash of ridicule has been unsparingly applied; we find, as children say, that "mocking is catching;" and the colloquial use of *Americanisms* is growing almost as common in Great Bri-

tain, as it is to attribute to "brother Jonathan" every marvellous story or monstrous fiction of the press. We will conclude our brief observations in the words of Dr. Webster of New York, who, in alluding to the prevalence of certain ungrammatical forms of speech, says, "Barbarous nations may indeed form languages; but it should be the business of civilized men to purify their language from barbarisms."

AM'ETHYST, a precious stone, generally of a violet or purple-violet colour, and of a transparent and shining nature. The hues of different amethysts are as various as the tints of purple; that is, as all the mixtures of blue and red. It is also found colourless, and may easily be made so by putting it into the fire; in which state it so resembles the diamond, that its want of hardness seems the only way of distinguishing it. Amethysts are found in the East and West Indies, and in several parts of Europe; the oriental ones, at least some of the finer specimens, being so hard and bright, as to equal any of the coloured gems in value.

AMETHYS'TEA, in botany, a genus of plants of the monogynia order, belonging to the diandria class.

AMETHYS'TINA, ancient garments of a purple or violet colour.

AMETHYS'TINUS, in conchology, a species of Venus, of an ovate shape and violet colour, with perpendicular striæ. It is about two inches in length and breadth. ——AMETHYSTINUS, in ornithology, a beautiful species of *trochilus*, or humming-bird, of Cayenne.——AMETHYSTINUS, in entomology, an insect of the *apis* genus, with black body and violet wings.

AMIAN'THUS, an incombustible mineral flax, which may be drawn into threads and wove into cloth. It is mostly found among rocks.

AMIC'TUS, in Roman antiquity, was any upper garment worn over the tunica.

AMID'-SHIPS, a naval term, signifying, in the middle of the ship, applied either to length or breadth.

AM'MON, the title under which Jupiter was worshiped in Libya, where a temple was erected to him, from which oracles were delivered for many ages.

AMMO'NIA, a volatile alkali, which, when in its purest state, exists only in the form of a gas. It forms a liquid when cooled, and is known in medicine by the name of *spirits of hartshorn*, the effect of which on the nervous system, in fainting-fits, is well known.——NITRATE OF AMMONIA is formed by diluting nitric acid with carbonate of ammonia; and from it is obtained the nitrous oxyde, or exhilarating gas.

AMMO'NIAC, or GUM AMMO'NIAC, is a resinous substance brought from the East Indies in drops or granules. The best kind is of a yellowish colour without, and white within.——SAL AMMONIAC, a volatile salt, of which vast quantities are thrown out by Mount Etna. The sal-ammoniac used in the shops is artificial, being composed of a volatile alkaline and the acid of sea-salt, and is therefore called *Muriate of Ammonia*. When pure, this salt promotes perspiration.

AMMONI'TÆ, in natural history, the *cornua ammonis*, or snake-stones, which are found in considerable quantities in the alum works in Yorkshire, and other parts of England. They are made up of circles, like the rings of a snake rolled up.

AMMUNI''TION, all warlike stores, and especially powder, ball, bombs, guns, and other weapons necessary for an army.

AM'NESTY, an act by which two parties at variance promise to pardon and bury in oblivion all that is past. It is more especially used for a pardon granted by a prince to his rebellious subjects.

AMO'MUM, one of the aromatic herbs formerly used for the preservation of dead bodies; whence is derived the word *mummy*. In the Linnæan system, it is the name of a genus of plants of the monandria class.

AMORTIZA'TION, in law, an alienation of lands or tenements in mortmain.

AMPELI'TES, called also PHARMACITIS, or CANAL COAL, is a hard, opaque fossil, inflammable substance, of a black colour. It is dug in many parts of England, but the finest is in Lancashire and Cheshire. In the fire it flames violently at first, continues red and glowing hot a long time, and finally is reduced into a small portion of gray ashes. It is capable of a very high polish; and is manufactured into toys, snuff-boxes, &c., which are made to pass for jet.

AMPHIARTHRO'SIS, in anatomy, a term for such junctures of bones as have motion similar to that of the articulation of the ribs with the vertebræ.

AMPHIBI'A, a class of animals which live equally well in air or water, such as the phocæ or seal tribe, frogs, lizards, crocodiles, eels, water serpents, and snakes. They are remarkable for their tenacity of life. Cuvier and other zoologists of the present day have superseded this term by that of *Reptilia*.

AMPHIBIOL'ITHUS, a genus of petrifactions in the Linnæan system, so called from its being the part of an amphibious animal petrified.

AMPHIC'TYONS, in Grecian antiquity, an assembly composed of deputies from the different states of Greece. The amphictyons at first met regularly at Delphi, twice a year, viz. in spring and autumn; but in later times they assembled at the village of Anthela, near Thermopylæ; and decided all differences between any of the Grecian states, their determinations being held sacred and inviolable.

AMPHIP'PI, in Grecian antiquity, soldiers who, in war, used two horses without saddles, and were dextrous enough to leap from one to the other.

AMPHIBOL'IA, or AMPHIBOL'OGY, in rhetoric, ambiguity of expression, when a sentence conveys a double meaning. It is distinguished from an equivocation, which lies in a single word.

AMPHIDRO'MIA, an Athenian festival celebrated on the fifth day after the birth of a child, when it was carried round the fire, and presented to the household gods.

AMPHIMAS'CHALI, in antiquity, a name given to coats with two sleeves, worn only by freemen.

AMPHISBÆ'NA, a serpent which moves with either end forward, a power produced by an arrangement of 200 or 300 rings, through its length.

AMPHIS'CII, the name applied to the inhabitants of the torrid zone. Amphiscii, as the word imports, have their shadows one part of the year towards the north, and at the other towards the south, according to the sun's place in the ecliptic. When the sun is in its zenith they have no shadow, wherefore Pliny calls them *Ascii*.

AMPHITHE'ATRE, in antiquity, a spacious edifice, built either round or oval, with a number of rising seats, upon which the people used to sit and behold the combats of gladiators, of wild beasts, and other sports. Some of them, as the Coliseum at Rome, were capable of containing from 50,000 to 80,000 spectators. The principal parts of the amphitheatre were the *arena*, or place where the gladiators fought; *cavea*, or hollow place where the beasts were kept; *podium*, or projection at the top of the wall which surrounded the arena, and was assigned to the senators; *gradus*, or benches, rising all round above the podium; *aditus*, or entrances; and *vomitoriæ*, or gates which terminated the aditus.

AMPHITRI'TE, in zoology, the name of a small naked sea insect, of an oblong figure, with only one tentaculum, resembling a piece of thread.

AM'PHORA, in antiquity, a liquid measure in use among the Greeks and Romans. The Roman amphora contained forty-eight sextaries, and was equal to about seven gallons one pint, English wine-measure; and the Grecian, or Attic amphora, contained one third more. Amphora was also a dry measure in use among the Romans, and contained three bushels.

AMPHORI'TES, in antiquity, a sort of literary contest in the island of Ægina, where the poet who made the best dithyrambic verses in honour of Bacchus was rewarded with an ox.

AMPHOTI'DES, in antiquity, a kind of armour or covering for the ears, worn by the ancient pugiles, to prevent their adversaries from laying hold of this part.

AMPLIFICA'TION, in rhetoric, part of a discourse or speech, wherein a crime is aggravated, a praise or commendation heightened, or a narration enlarged, by an enumeration of circumstances, so as to excite the proper emotions in the minds of the auditors.

AM'PLITUDE, in astronomy, an arc of the horizon intercepted between the east or west point and the centre of the sun, or a planet, at its rising or setting.——Amplitude Magnetical, is an arc of the horizon contained between the centre of the celestial body when rising or setting, and the east or west point of the compass. It is always equal to the difference between the true amplitude and the variation of the compass.

AMPUL'LA, an ancient drinking vessel; and among ecclesiastical writers it denotes one of the sacred vessels used at the altar. The ampulla is still a distinguished vessel in the coronation of the kings of England and France. The vessel now in use in England is of the purest chased gold, and represents an eagle with expanding wings standing on a pedestal, near seven inches in height, and weighing about ten ounces. It was deposited in the Tower by the gallant Edward, surnamed the Black Prince.

AM'PYX, in antiquity, a kind of golden chain, which served to bind the hair of horses, and sometimes of men and women, on the forehead.

AM'ULET, a superstitious charm or preservative against mischief, witchcraft, or diseases. They were made of stone, metal, animals, and, in fact, of every thing which fancy or caprice suggested. Sometimes they consisted of words, characters, and sentences, ranged in a particular order, and engraved upon wood, &c., and worn about the neck, or some other part of the body. At other times they were neither written nor engraved; but prepared with many superstitious ceremonies, great regard being usually paid to the influence of the stars.

AMUSETTE, a small one-pound cannon, employed in war, in mountainous regions; and which for lightness and facility of movement, possesses great advantages.

AMYG'DALOID, a compound mineral, composed of spheroidal particles or vesicles of lithomarge, green earth, calc spar, and steatite, imbedded in a basis of fine-grained green-stone, or wacke.

AMYGDALO'IDES Lapis, in natural history, a stone which resembles the kernel of an almond. It is the petrified spine of the sea-urchin.

AM'ZEL, in ornithology, the English name of two species of merulæ, or blackbirds.

A'NA, a name given to amusing miscellanies, consisting of anecdotes, traits of character, and incidents relating to any person or subject.——Ana, among physicians, denotes an equal quantity of the ingredients which immediately precede it in prescriptions; as syrup and water, *ana*, *aa* or *a* ℥ii. that is, of syrup and water each two ounces.

ANABAP'TISTS, a name given to a Christian sect, because they objected to infant baptism, and baptized again those who joined them. They appeared in Germany in 1521, immediately after the rise of Lutheranism. At first they preached up an entire freedom from all subjection to the civil as well as ecclesiastical power; but the tenet from whence they take their name, and which they still maintain, is their re-baptizing all new converts to their sect. The Baptists of England form a dis-

THERE ARE TWO SPECIES OF AMPHISBÆNA, ONE WITH BLACK AND WHITE SPOTS, THE OTHER WHITE; BOTH ARE HARMLESS.

AMULETS, CHARMS, PALMISTRY, AND LUCKY OR UNLUCKY DAYS, ARE THE RELICS OF AGES OF IGNORANCE AND MENTAL SLAVERY.

tinct sect, without any connexion with the ancient Anabaptists here spoken of.

ANABA'SIS, the title of Xenophon's description of the younger Cyrus's expedition against his brother, in which the writer bore a principal part.——ANABASIS, among physicians, denotes either the increase or augmentation of a fever in general, or of any particular paroxysm.

ANABRO'SIS, in medicine, a corrosion of the solid parts by acrid humours.

ANACALYPTE'RIA, in antiquity, festivals among the Greeks on the third day after marriage, when the bride was allowed to take off her veil, which she had till that time worn.

ANACAR'DIUM, or CASHEW-NUT TREE, a native of the West Indies, where it grows to the height of 20 feet. The fruit is as large as an orange, and full of an acid juice, which is frequently used in making punch; and at the apex grows a kidney-shaped nut, the kernel of which is sweet and pleasant; but between it and the shell is a thick liquid, of such a caustic nature in the fresh nuts, that if the lips touch it they will be immediately blistered.

ANACATHAR'SIS, in medicine, a cleansing of the lungs by expectoration.——This term is likewise applied by divines to the clearing up of obscure passages of Scripture, by a spiritual interpretation.

ANACAMPTE'RIA, in ecclesiastical antiquity, edifices adjacent to churches, designed for the entertainment of strangers and the poor.

ANACAMP'TICS, the term formerly used to denote that branch of the science of optics which is now called *catoptrics*.

ANAC'HRONISM, in literature, an error with respect to chronology, whereby an event is placed earlier than it really happened; in which sense it stands opposite to parachronism.

ANACLAS'TICS, that part of optics which considers the refraction of light.

ANACLETE'RIA, a solemn festival celebrated by the ancients, when their kings or princes came of age, and assumed the reins of government.

ANACLINOP'ALE, among the ancient athletæ, a kind of wrestling, performed on the ground; the combatants voluntarily throwing themselves down for that purpose.

ANACREON'TIC VERSE, in ancient poetry, a kind of verse, so called from its being much used by the poet Anacreon. It consisted of three feet, generally spondees and iambics, sometimes anapæsts, and was peculiarly distinguished for softness and tenderness.

ANACLINTE'RIA, in antiquity, a kind of pillows on the dining-bed, whereon the guests leaned.

ANACOLU'THON, in grammar or rhetoric, a want of coherency, generally arising from inattention on the part of the writer or orator.

ANACOLYP'PA, an Indian plant, the juice of which is a preservative against the bite of the cobra capella.

ANADE'MA, in antiquity, an ornament of the head, wherewith victors at the sacred games had their temples bound, and also worn by the Grecian women.

ANADIPLO'SIS, a figure in rhetoric and poetry, in which the last word or words of a sentence are repeated at the beginning of the next.

ANAGNOS'TA, or ANAGNOS'TES, in antiquity, a servant kept by families of distinction, whose office was to read to them at meals, or whenever they had leisure to listen to him.

AN'AGRAM, the change of one word or phrase into another, by the transposition of its letters. They were very common among the ancients, and occasionally contained some happy allusion; but, perhaps, none were more appropriate than the anagram made by Dr. Burney on the name of the hero of the Nile, just after that important victory took place: HORATIO NELSON, "*Honor est a Nilo.*" They are frequently employed satirically, or jestingly, with little aim beyond that of exercising the ingenuity of their authors. Thus, if the reader were to transpose the letters contained in the title of our youthful Queen, HER MOST GRACIOUS MAJESTY ALEXANDRINA VICTORIA! he would find that the following anagram might be formed of them: "*Ah! my extravagant joco-serious radical Minister.*" Now it may be difficult to imagine any thing more ridiculous or inapplicable than such an exclamation, yet one half of the anagrams in existence are not a whit less absurd; and it is therefore surprising that pastime so puerile and trifling should have been treated seriously by the literati of any age. [A few more anagrammatical specimens are inserted between the marginal rules, but the only ones for which we claim the merit of originality are those on the Queen and the Duke of Wellington: in the latter the redundant letter *k* may well be allowed to stand for his numerous orders of knighthood, and his long career of successful valour entitles him to the appellation of a KNIGHT *par excellence*.]

ANALEC'TA, a collection of extracts from different works.——With the ancients, *Analecta* signified a servant whose business it was to gather up what fell from the table at meals.

ANALEM'MA, in geometry, a projection of the sphere on the plane of the meridian, orthographically made by straight lines and ellipses, the eye being supposed at an infinite distance, and in the east or west points of the horizon.——ANALEMMA is also a kind of astrolabe.

ANALEP'TICS, in medicine, restoratives which serve to repair the strength, and to raise the depressed spirits

ANAL'OGY, a certain relation and agreement between two or more things, which in other respects are entirely different. Or it may be defined, an important process of reasoning, by which we infer similar effects and phenomena from similar causes and events. A great part of our philosophy has no other foundation than analogy.

ANAL'YSIS, in chemistry, is the sepa-

THE MANUFACTURE OF ANCHORS REQUIRES GREAT KNOWLEDGE OF THE STRUCTURE OF IRON, AND SKILL IN THE ART OF WORKING IT.

ration of any substance into its constituent parts, to ascertain their nature, relative proportions, and their mode of union.——ANALYSIS, among mathematicians, is the art of discovering the truth or falsehood of a proposition, or its possibility and impossibility. This is done by supposing the proposition, such as it is, true; and examining what follows from thence, until we arrive at some evident truth, or some impossibility, of which the first proposition is a necessary consequence; and from thence establish the truth or impossibility of that proposition.——ANALYSIS, among grammarians, is the explaining the etymology, construction, and other properties of words. ——The analysis of finite quantities is properly called specious arithmetic, or algebra; the analysis of infinite quantities is the method of fluxions or differential calculus. ——ANALYSIS is also used for a brief, but methodical, illustration of the principles of a science; in which sense it is nearly synonymous with what is termed a synopsis.

ANAMNE'SIS, in rhetoric, an enumeration of the things treated of before; which is a sort of recapitulation.

ANAMORPHO'SIS, in perspective and painting, the representation of some image, either on a plane or curved surface, deformed, or distorted; which in a certain point of view appears regular and in just proportion.

ANA'NAS, in botany, a species of *bromelia*, commonly called pine-apple, from the similarity of its shape to the cones of firs and pines.

ANAPH'ORA, a rhetorical figure, which consists in the repetition of the same word or phrase at the beginning of several successive sentences.——ANAPHORA, in astronomy, an ascension or rising of the twelve signs of the zodiac from the east to the west, by the daily course of the heavens.

ANAPLEROT'ICS, in pharmacy, such medicines as promote the growth of flesh in wounds and ulcers.

ANAR'CHI, in antiquity, an epithet applied by the Athenians to the four supernumerary days in their year, in which they had no magistrates.

AN'ARCHY, a society without a government, or where there is no supreme governor.

A'NAS, in ornithology, a species of birds belonging to the order of *anseres*, of which there are about 100 species.

ANASTAL'TICS, in pharmacy, astringent or styptic medicines.

ANASTAT'ICA, in botany, the rose of Jericho.

ANAS'TROPHE, in rhetoric, the inversion of words in a sentence, or the placing them out of their natural order.

ANATH'EMA, among ecclesiastical writers, imports whatever is set apart, separated, or divided; but the word is most usually intended to express the cutting off a person from the privileges of society, and from communion with the faithful. The anathema differs from simple excommunication, inasmuch as the former is attended with curses and execrations. Anathemas are judiciary and abjuratory: the former can only be denounced by a council, a pope, or a bishop; the latter makes a part of the ceremony of abjuration, the convert being obliged to anathematize the heresy he abjures.

ANAT'OMY, the act of dissecting bodies for the purpose of examining their structure, and the nature, uses, and functions of their several parts; also the knowledge of the human body derived from such dissections and examinations. Anatomy is divided into *human* and *comparative*. Human anatomy is that which is employed on the human body; comparative anatomy, that which is employed upon the bodies of other animals, these serving for the more accurate distinctions of several parts, and supplying the defects of human subjects. As a philosophic inquiry, it may be observed, that it is impossible not to be interested in the conformation of our own bodies: as a religious one, it will not fail to impress us with the most becoming ideas of our Creator.

AN'CESTORS, those from whom a person is descended in a direct line, the father and mother not included. The law makes a difference between ancestors and predecessors, the first being applied to a natural person, as a man and his ancestors, and the latter to a body politic, as a bishop and his predecessors. We say likewise, a prince and his predecessors, to signify the kings that have reigned before; but we never say a king and his ancestors, unless he is by birth descended of his predecessors.

AN'CESTRY, the line of ancestors or forefathers from which any person is descended.

AN'CHOR, a heavy, strong, crooked instrument of iron, cast or dropped from a ship into the water to retain her in a convenient station in a harbour, road, or river. Anchors were originally mere weights: at present they are intended to fasten in the ground as hooks. They are contrived so as to sink into the earth as soon as they reach it, and to hold a great strain before they can be loosened or dislodged. Every ship has, or ought to have, three principal anchors, with a cable to each, viz. the *sheet*, the *best bower*, and the *small bower*, so called from their usual situation on the ship's bows. There are besides small anchors for moving a ship from place to place in a harbour or river, where there may not be room or wind for sailing; these are the *stream*-anchor, the *kedge*, and the *grapnel*. The last, however, is chiefly designed for boats.

AN'CHORAGE, the ground that is fit for holding the anchor; also the duty taken of ships for the use of the haven where they cast anchor.

AN'CHORET, AN'CHORITE, or AN-ACH'ORET, in a general sense, means a hermit, or one who voluntarily lives apart from the world. In all ages and in all countries, retirement from the world has been considered as facilitating the attainment of

THE WORD ANCHOR IS USED IN A FIGURATIVE SENSE, TO DENOTE THAT WHICH GIVES STABILITY, OR ON WHICH WE PLACE DEPENDANCE.

a virtuous life. In Egypt and Syria, where Christianity became blended with the Grecian philosophy, and strongly tinged with the peculiar notions of the East, the anchorets were most numerous; and from those who lived in cells, in the vicinity of a church, the convents of a later period sprung, which were filled with inmates anxious to escape from the tumult and bloodshed which marked the beginning of the middle ages.

ANCHO'VY, a small sea-fish much used in sauce; it is so like the common sprat, that the latter is often pickled and sold under its name.

ANCHYLO'SIS, in medicine, a stiffness or immobility of the joints, arising from various causes, and often connected with deformities of the limbs. For the most part it is the result of inflammation in the membrane lining the joints.

ANCO'NY, in the iron works, a piece of half-wrought iron, of about three quarters of a hundred weight, of the shape of a bar at the middle, but rude and unwrought at the ends. It is afterwards sent to a forge called a chafery, where the ends are wrought into the shape of the middle, and the whole is made into a bar.

ANC'TER, in surgery, the fibula or button by which the lips of wounds are held together.

ANCU'BITUS, in medicine, that affection of the eyes in which they seem to contain sand.

ANCY'LE, or ANCI'LE, in antiquity, a small brazen shield which fell, as was pretended, from heaven in the reign of Numa Pompilius, when a voice was heard, declaring that Rome should be mistress of the world as long as she should preserve this holy buckler.

ANCYLOBLEPH'ARON, in medicine, a disease of the eye which closes the eyelids.

ANCY'LOGLOSSUM, in medicine, a contraction of the ligaments of the tongue, so as to hinder the speech.

ANDA'BATÆ, in antiquity, gladiators, who, mounted on horseback, or in chariots, fought blindfold, the helmet covering their eyes.

ANDAN'TE, in music, the Italian term for exact and just time in playing, so as to keep the notes distinct from each other. ——ANDANTE LARGO, signifies that the music must be slow, the time exactly observed, and each note distinct.

ANDANTI'NO, in music, an Italian word for gentle, tender; somewhat slower than *andante*.

ANDRAPODIS'TES, in antiquity, dealers in slaves, being in general kidnappers that stole children for the purpose of selling them.

ANDRO'IDES, in mechanics, a term used to denote an automaton in the figure of a man, which, by means of certain springs and other mechanical contrivances, is enabled to walk, and perform other actions of a man. The construction of an androides is justly supposed to indicate great skill in mechanics, and, with that of various other automata, has frequently engaged the attention of ingenious minds.

ANDRO'GYNOUS, in botany, an epithet for plants bearing male and female flowers on the same root, without any mixture of hermaphrodites.

ANDROM'EDA, in astronomy, a small northern constellation consisting of numerous stars. It is represented by the figure of a woman chained, and is situated behind Pegasus, Cassiopeia, and Perseus. ——ANDROMEDA, in botany, is the marsh cystus. In entomology, a species of *papilio*, found in Italy.

ANEMOM'ETER, an instrument used for measuring the force and velocity of the wind. Various instruments have been invented for this purpose; the first of which is attributed to Wolfius, who described it in 1709; but considerable improvements have been since made upon its construction. In the experiments made by Dr. Lind with his anemometer, he found, in one instance, that the force of the wind was such as to be equal to upwards of 34 lbs. on a square foot, answering to a velocity of 93 miles per hour!

ANEM'ONE, a beautiful flower, originally brought from the East, but now much cultivated in our gardens. The word signifies properly wind-flower, because it was supposed that it opened only when the wind blew.

ANEM'OSCOPE, a machine showing from what point of the compass the wind blows. This is done by means of an index moving about an upright circular plate, the index being turned by an horizontal axis, and the axis by an upright staff, at the top of which is the fane moved about by the wind. Some are so made as, even in the absence of the observer, to note down the changes of the wind! But any contrivance, however simple, which indicates the direction of the wind, is properly an anemoscope.

AN'EURISM, in surgery, a diseased swelling of an artery, attended with a continued pulsation. Though aneurisms most frequently happen in the brachial artery, yet the disorder is not restrained to that part alone; for they may arise from an infinite number of cases, both external and internal, in all parts, where there are any arterial trunks or considerable branches distributed.

AN'GARI, or ANGA'RII, in antiquity, public couriers appointed for the carrying of messages, and stationed at certain distances from each other on the public roads.

ANGA'RIA, in Roman antiquity, was a kind of public service imposed on the provincials, which consisted in providing horses and carriages for the conveyance of military stores, &c.

AN'GEL, the name given to those spiritual, intelligent beings, who are supposed to execute the will of God, in the government of the world. It is sometimes used in a figurative, and at others in a literal sense. The number of angels is no where

mentioned in scripture; but it is always represented as immensely great, and also that there is a subordination among them. Hence ecclesiastical writers make an hierarchy of nine orders of angels. But besides these, we read of evil angels, the ministers of God's wrath; as the destroying angel, the angel of death, the angel of Satan, the angel of the bottomless pit, and the fallen angels, or those who kept not their first estate, but fell from their obedience into sin, and were expelled the regions of light. In general, good and bad angels are distinguished by the opposite terms of angels of light, and angels of darkness.——ANGEL, the name of an ancient gold coin in England, so called from the figure of an angel upon it. It weighed four pennyweights.

ANGEL'ICA, in botany, a genus of the digynia order, and pentandria class of plants. All the parts of angelica, especially the root, have a fragrant aromatic smell, and a pleasant bitterish taste. It is highly valuable in medicine.——ANGELICA, in Grecian antiquity, a celebrated dance performed at their feasts, so called, because the dancers were dressed in the habit of messengers.

AN'GINA, the quinsy; an inflammatory disease of the throat.——ANGINA GANGRENOSA, or AQUOSA, the ulcerated, malignant, putrid sore throat.

ANGIOSPER'MIA, a term for such plants of the class didynamia as have their seeds enclosed in a capsule or seed-vessel.

AN'GLE, in geometry, the opening, or mutual inclination, of two lines, or of two or more planes, meeting in a point called the vertex, or angular point. Angles are of great use in almost every branch of mathematics. They make one half the subject of trigonometry, and have much to do in geography, astronomy, &c. When they meet perpendicularly, it is called a *right* angle, and is 90 degrees; when less than a right angle, it is called an *acute* angle; and when larger than a right angle, an *obtuse* angle; when two circles cross each other, it is called a *spherical* angle; or two curves, a *curvilinear* angle; and the angles made by solids, are called *solid* angles.——ANGLES IN MECHANICS. 1. *Angle of direction*, is that comprehended between the lines of direction of two conspiring forces. 2. *Angle of elevation*, is that which is comprehended between the line of direction, and any plane upon which the projection is made, whether horizontal or oblique.——ANGLE OF INCIDENCE, in optics, the angle which a ray of light makes with a perpendicular to that point of the surface of any medium on which it falls.——ANGLE OF LONGITUDE, in astronomy, the angle which a circle of a star's longitude makes with the meridian at the pole of the ecliptic.——ANGLE OF PARALLAX, the angle made by two lines supposed to be drawn from the centre of a planet to the surface of the earth.——ANGLES, IN FORTIFICATION, are understood of those formed by the several lines used in fortifying, or making a place defensible.

AN'GLER, in ichthyology, the Lophius Piscatorius of Linnæus; a singular fish, which is also known by the name of the fishing-frog, from the resemblance it bears to that animal in the tadpole state. Its head is much bigger than its whole body, and its mouth is prodigiously wide.

AN'GLICISM, an idiom of speech, or manner peculiar to the English.

AN'GLING, the art of ensnaring fish with a hook, which has been previously baited with a small fish, a worm, or a fly, &c. The best season for angling is from April to October: the cooler the weather, in the hottest months, the better; but in winter, on the contrary, the warmest day is the most promising. A cloudy day, after a moonlight night, is always favourable; as the fish avoid feeding by moonlight, and are therefore hungry. Warm, lowering days are always coveted by anglers.

ANGLO-SAX'ON, the name of the people called Angles, who with the Saxons and some other German tribes, flourished in England after it was abandoned by the Romans, about the year 400; and who introduced their language, government, and customs.——ANGLO-SAXON LANGUAGE. After the conquest of England by the Angles and Saxons, the Saxon became the prevalent tongue of that country; and after the Norman conquest, the English language exhibits the peculiar case, where languages of two different stocks are blended into one idiom, which by the cultivation of a free and active nation and highly-gifted minds, has grown to a powerful, organized whole.

ANGUIN'EAL, denotes something belonging to or resembling a snake, *anguis*. Hence we say, anguineal curve, hyperbola, verse, &c.

AN'GUIS, or SNAKE, in zoology, a genus belonging to the class *amphibia*, order *serpentes*.

ANGUSTU'RA CORTEX, a bark, which comes from the Spanish main, and is a powerful bitter.

AN'HIMA, in ornithology, a Brazilian bird, resembling in some degree a crane; from which, however, as well as from all other birds, it is distinguished by a slender horn, inserted a little above the origin of its beak; its wings too have each a horn of this kind, growing out of the fore-part of the bone.

ANHIN'GA, in ornithology, an extremely beautiful water-fowl of the Brazils, about the size of a common duck. It feeds on fish, and is a species of the plotus.

AN'IMA, among divines and naturalists, denotes the soul, or principle of life in animals.——ANIMA MUNDI, a phrase formerly used to denote a certain pure ethereal substance or spirit which is diffused through the mass of the world, organizing and actuating the whole and the different parts.——ANIMA, among chemists, denotes the volatile or spirituous part of bodies.——ANIMA is also used for the principle of vegetation in plants.

AN'IMAL, a living body endued with sensation and spontaneous motion. In its

limited sense, any irrational creature, as distinguished from man.——ANIMAL, according to the definition of Linnæus, is an organized, living, and sentient being. If, however, the term be disputed, it is very difficult to define what classes of created things are strictly animal: in a general sense, it is applied to every thing that is supposed to be alive to the sensations of pain and pleasure. Under the name of animal, therefore, are included men, quadrupeds, birds, fishes, reptiles, and insects. Linnæus has formed a climax of the grand departments of creation: thus, says he, stones *grow;* vegetables *grow* and *live;* animals *grow, live,* and *feel.* Still, the animal and vegetable kingdoms are blended in so many ways, and separated from each other by such imperceptible gradations, that it is impossible to draw a line, at which we can affirm that animal life ends and vegetable begins. We can, however, point out certain general characteristics, which clearly distinguish this from the other kingdoms of nature: for instance, they are composed of bones for strength, of muscles for motion, of nerves for sensation, and of fluids for distributing heat and food, within the package of a skin, which evacuates superfluities. The Linnæan system comprehends six classes of animals; namely, *Mammalia,* or such as suckle their young, mostly quadrupeds; *Aves,* birds, which are oviparous; *Amphibia,* amphibious animals; *Pisces,* fishes, such as live only in the water, and are covered with scales; *Insecta,* insects, which have few or no organs of sense, and a bony coat of mail; and *Vermes,* worms, which have mostly no feet. In this systematic classification man was included; but Cuvier has assigned him a distinct order, which he terms *Bimana,* thus separating him from monkeys, with whom he had been derogatively classed.

ANIMAL FUNCTIONS, are those by which the materials that constitute and support the bodies of animals, are prepared and supplied. The principal of these functions are the following: circulation, digestion, nutrition or assimilation, respiration, and secretion, which are employed in producing animal matter from the substances that compose it. But, besides these, there are others, which though they do not act chemically, like the foregoing, are in many animals subservient to various important purposes.

ANIMAL HEAT, is that property of all animals by which they preserve a certain temperature, which is quite independent of that of the medium by which they are surrounded, and is essentially necessary to life. That of a man in health is from about 94° to 100° Fahrenheit. It appears to depend upon the absorption of oxygen in the lungs, and is most intimately connected with the state of the nervous system; for the heat of the human body remains the same when exposed to the most extreme degrees of temperature.

ANIMAL'CULA, (ANIMALCULUM, *sing.* a little animal), is a term which may be applied to any living creatures, whose existence cannot be discovered without the aid of glasses. Naturalists suppose, and with great reason, that there is a farther order of animalcules which escape the cognizance of even the best microscopes. The naked eye takes in a series from the elephant to the mite: at this point commences a new class of animals, which comprehends all those from the mite to such as are said to be many millions of times smaller than the mite! As to the origin and propagation of animalcula, we find naturalists extremely at a loss, and therefore advancing conjectures and hypotheses, each more chimerical than the other. The system of putrefaction solves the difficulty quickly: but the supposition is unphilosophical, and contrary to observation and analogy. Yet how such vast numbers of animals can be, as it were, at pleasure produced, without having recourse to something like equivocal generation, is very difficult to say! To produce a million of living creatures in a few hours, by only exposing a little water in a window, or by adding to it a few grains of some seed, or leaves of a plant, seems difficult to believe. We therefore must suppose them to have been pre-existent. With regard to their structure and economy, animalculæ are found of various sorts; some formed like fishes, others reptile, others hexapedal; some horned, &c. In several kinds, however small, it is easy to discover the form of their mouths, their proboscides, horns, &c. the motions of their hearts, lungs, and other parts. Lewenhoek computed that three or four hundred of the smallest animalcules which he had at the time under his observation, if placed contiguous to each other in a line, would only equal the diameter of an ordinary grain of sand!

ANIMAL'CULA INFUSO'RIA, or ANIMALCULES OF INFUSION, take their name from being found in all kinds, either of vegetable or animal infusions. Indeed, there is scarcely any kind of water, unless impregnated with some mineral substance, but what contains living creatures; and so exquisitely minute are they, that the most powerful microscopes can only discover points in motion in the fluid, gradually decreasing till they become imperceptible to the view!——ANIMALCULES are said to be the cause of various disorders. The itch, from several experiments, is affirmed to be a disorder arising from the irritations of a species of animalcula found in the pustules of that disease, whence the communication of it by contact from one to another is easily conceived, as also the reason of the cure being effected by cutaneous applications.

AN'IMATED, or AN'IMATE, in a general sense, denotes something endowed with animal life. It also imports a thing to be impregnated with vermin, or animalcules; in which sense, all terrestrial bodies whatever may be said to be animated.——ANIMATE POWER, in mechanics, signifies a power in animal beings, in distinction from that which exists in inanimate bodies, as

springs, &c.——ANIMATED MERCURY, a chemical term for quicksilver impregnated with some subtile and spirituous particles, so as to render it capable of growing hot when mixed with gold.

ANIMA'TION, in physiology, signifies life itself: to the complete existence of which, the healthful condition of all the organs of the body, and the due concurrence of all the elements, are necessary. ——SUSPENDED ANIMATION. Life may suffer considerable diminution of its powers, and even a total suspension, without being absolutely destroyed. The action of the lungs, and consequently all the functions of the body, depend upon the free use of air. The want of this great principle of life causes faintings in crowded assemblies; and it is from the same privation of air, that drowning and suffocation produce death.

AN'IME', or GUM AN'IME', a resinous substance imported from New Spain and the Brazils, which is obtained by incision from a tree. It is said to be an inferior kind of myrrh, and is good for pains in the head.——ANIME, in heraldry, a term used when the eyes of any rapacious creature are borne of a different tincture from the creature itself.

AN'IMUS, in metaphysics, the mind or reasoning faculty, in distinction from *anima*, the being or faculty in which the faculty exists.

ANIN'GA I'BIS, an Indian bulbous aquatic plant, five or six feet high, with leaves similar to the water-lily. From its root is expressed an oil of great medicinal use for fomentation.

AN'ISE-SEED, in the materia medica, a small seed, of an oblong shape, ending each way in an obtuse point, with a surface very deeply striated, and of a lax and brittle substance. It is the production of an umbelliferous plant (*pimpinella anesum*) which grows wild in Egypt, Syria, and other countries of the East. Anise-seeds are imported from Spain and Italy, where they are cultivated to a considerable extent.

AN'LACE, a falchion or sword, shaped like a scythe.

AN'NALS, a species of history, in which events are related in the exact order of chronology. They differ from perfect history in this, that annals are a bare relation of what passes every year, as a journal is of what passes every day; whereas history relates not only the transactions themselves, but also the causes, motives, and springs of actions.

ANNA'TES, in ecclesiastical law, first-fruits paid out of spiritual benefices to the pope, being the value of one year's profit.

ANNEA'LING, the process of heating steel and other metal bodies, and then suffering them to cool again gradually. The greater number of metals diminish in bulk when they pass from a fluid to a solid state; iron, on the contrary, expands.

AN'NO DOMI'NI, abbreviated A. D., the year of our Lord; the computation of time from our Saviour's incarnation. It is used as the date for all public deeds and writings in England, on which account it is called the "Vulgar Era."

ANNO'NA, in Roman antiquity, signified properly, a year's produce from land; but it is also taken for the yearly quantum of food necessary for the sustenance of man.——ANNONA is likewise the allowance of oil, salt, bread, flesh, corn, wine, hay, and straw, which was annually provided by contractors for the maintenance of an army.——ANNONA, in botany, the custard-apple, of which there are eight species.

ANNO'NÆ PRÆFECTUS, in antiquity, an extraordinary magistrate, whose business it was to prevent a scarcity of provisions, and to regulate the weight and fineness of bread.

ANNONA'RII, in antiquity, forestallers of the market, who bought up all the provisions before-hand, in order to raise the prices.

ANNOTA'TION, a brief commentary, or remark upon a book or writing, in order to clear up some passage, or draw some conclusion from it.——ANNOTATION, in medicine, is the beginning of a febrile paroxysm, when the patient grows chilly, yawns, shudders, or the like.

ANNOTTO, or ARNOTTA, in dyeing, an elegant red colour, formed from the pellicles or pulp of the seeds of the *bixa*, a tree common in South America. It is also called *Terra Orleana*, and *roucou*. To rectified spirit of wine it very readily communicates a high orange or yellowish red, and hence is used as an ingredient in varnishes for giving an orange cast to the simple yellows. Alkaline salts render it perfectly soluble in boiling water, without altering its colour. Wool or silk boiled in the solution acquires a deep, but not a very durable, orange dye. It is used for colouring cheese.

AN'NUAL, an epithet for whatever happens every year, or lasts a year; thus we say, the annual motion of the earth, annual plants, annual publications, &c.

ANNU'ITY, the periodical payment of money, either yearly, half-yearly, or quarterly; for a determinate period, as ten, fifty, or a hundred years; or for an indeterminate period, dependent on a certain contingency, as the death of a person; or for an indefinite term, in which latter case they are called perpetual annuities. As the probability of the duration of life at every age is known, so annuities may be purchased for fixed sums during the life of the party. An annuity is said to be in *arrear* when it continues unpaid after it is due, and in *reversion*, when it is to fall to the expectant at some future time.

AN'NULAR, anything in the form of, or resembling, a ring. Hence, ANNULAR, in anatomy, is an appellation given to several parts of the body: thus, the *annular cartilage* is the second cartilage of the larynx; the *annular ligament* is a strong ligament encompassing the wrist, after the manner of a bracelet; and *annular process* is that which surrounds the medulla oblongata.

AN'NULATE, in botany, an epithet for

THE WORD ANNALS COMES FROM THE FIRST ANNUAL RECORDS OF THE ROMANS, THE "ANNALES PONTIFICUM," OR "ANNALES MAXIMI."

OUR SPLENDID "ANNUALS" ARE THOUGHT TO EXTEND THE NATIONAL TASTE FOR WORKS OF ART; BUT CYNICS CALL THEM SAFETY-VALVES FOR POETS.

a capsule, stem, and root, according as either of them is surrounded by apparent rings, or annular elevations.

ANNULA'TUS, in entomology, the name of several species of insects.

AN'NULET, in architecture, a small square member in the Doric capital, under the quarter-round. Also a narrow flat moulding, encompassing other parts of the column, as in the base, capital, &c., which is variously termed *fillet*, *cincture*, &c.

ANNUNCIA'TION, the delivery of a message, particularly the angel's message to the Virgin Mary, concerning the birth of our Saviour. The festival in commemoration of that event is called Lady-day, and falls on the 25th of March.

AN'ODYNES, medicines so called because they ease pain and procure sleep, such as the medicinal preparations of the poppy. They are divided into three classes: Paregorics, or such as assuage pain; soporifics, or such as relieve by procuring sleep; and narcotics, or such as ease the patient by stupifying him.

ANOMA'LIA, in medicine, inequality or irregularity as applied to the pulse.

ANOM'ALOUS, in a general sense, is applied to whatever is irregular, or deviates from the rule observed by other things of the like nature.——ANOMALOUS VERBS, in grammar, such as are irregularly formed, of which the Greek language furnishes numerous examples.

ANOM'ALY, any irregularity or peculiar phenomena of motion.——ANOMALY, in astronomy, is an irregularity in the motion of a planet, by which it deviates from the aphelion or apogee.

ANOMALIS'TICAL YEAR, in astronomy, the time that the earth takes to pass through her orbit.

ANO'MIA, or BOWL-SHELL, in conchology, a genus of insects belonging to the order of *vermes testacea*. They are bivalve, the shells unequal, and one valve is perforated near the hinge, and affixed by that perforation to some other body. Twenty-five species are enumerated.

ANOMORHOMBOI'DIA, in mineralogy, a genus of pellucid crystalline spars, of no regular external form, but always breaking into regular rhomboidal masses, and cleaving into plates which always consist of rhomboidal concretions.

ANOREX'IA, a term in the medical art, for the loathing of food; and is either original, or symptomatic of some disorder.

ANOS'MIA, in medicine, a disease attended with a diminution or loss of smell.

AN'SER, a star of the fifth magnitude in the Milky Way.

AN'SERES, the third order of birds in the Linnæan system, including such as have the bill somewhat obtuse, covered with a skin, and gibbous at the base; as the goose, duck, swan, &c.

ANT, (*formica*) in entomology, a well-known insect, much celebrated for its industry and economy. The ant makes a distinct genus of insects, of the order of the *hymenoptera*, or those with membranaceous wings; and is distinguished from the other genera of this order, by having an erect squama, or scaly body, placed between the thorax and abdomen. They are divided, like the bees and wasps, into males, females, and neutrals, which last constitute the great mass of this tribe, and appear to conduct the business of the nest. They feed both on animal and vegetable substances. The WHITE ANTS, which are found in the East Indies, Africa, and South America, are described as far exceeding in wisdom and policy, the bee, the ant, or beaver. They build pyramidal structures, divided into chambers, magazines, &c. These hills, or houses, are so strong as to bear four men to stand upon them; and in the plains of Senegal they appear like villages. Their social economy is of the most regular kind, and when large masses of them make an attack on any animal, their assault is so vigorous, that even men and large quadrupeds often become their victims. At Sierra Leone the travelling ants or marchers, as they are called, will sometimes approach the settlements in lines of two or three miles in length; they will cross considerable streams; and, entering a house, are perfectly irresistible except by fire.

ANTARC'TIC, in a general sense, denotes something opposite to the arctic, or northern pole. Hence, *Antarctic circle*, in geography and astronomy, is one of the lesser circles of the sphere, and distant only 23° 30′ from the south pole, which is likewise called antarctic for the same reason. The stars near the antarctic pole never appear above our horizon.

ANTA'RES, a star of the first magnitude, otherwise called the Scorpion's Heart.

ANTANACLA'SIS, in rhetoric, a figure which repeats the same word, but in a different sense; as "dum vivimus, vivamus."

ANTECE'DENCE, in astronomy, an apparent motion of a planet towards the west, or contrary to the order of the signs, *viz.* from Taurus towards Aries, &c.

ANTECE'DENT, in grammar, the word to which a relative refers: thus, "God whom we adore," the word *God* is the antecedent to the relative *whom*.——ANTECEDENT, in logic, is the first of the two propositions in an enthymeme.——ANTECEDENT, in mathematics, is the first of two terms of a ratio, or that which is compared with the other, as in the ratio of 2 to 3, or *a* to *b*, 2 and *a*, are each antecedents.——ANTECEDENT SIGNS, in medicine, such as are observed before a distemper is so formed as to be reducible to any particular class, or proper denominations.

ANTECŒ'NIUM, in antiquity, the first course at supper, consisting of eggs, herbs, &c., customary among the Greeks and Romans.

ANTECURSO'RES, in the Roman armies, a party of horse detached before, partly to get intelligence, provisions, &c., and partly to choose a proper place to encamp in. These were otherwise called ANTECESSORES, and by the Greeks, PRODROMI.

AN'TEDATE, a spurious, or false date, prior to the true date of a bond, bill, &c.

ANTEDILU'VIAN, whatever existed before the deluge; thus, the inhabitants of the earth from Adam to Noah are called the antediluvians.

AN'TELOPE, an animal partaking of the nature both of the deer and the goat, common in Africa, and other hot climates. They are remarkable for swiftness and elegance, and live in herds in hilly districts.

ANTEM'BASIS, in anatomy, a mutual insertion of the bones.

ANTEMERID'IAN, in astronomy, abbreviated A.M., the time before noon.

ANTEMURA'LE, in antiquity, the name for what is now called the counterscarp, or outwork, in fortification.

ANTEN'NÆ, in entomology, slender bodies with which nature has furnished the heads of insects; being the same with what are called horns or feelers.

ANTEPENUL'TIMA, ANTEPENUL'TIMATE, or, ANTEPENULT', in grammar, the third syllable of a word from the end, or the last syllable but two.

ANTECLE'MA, in oratory, is where the whole defence of the person accused, turns on criminating the accuser.

AN'THELIX, in anatomy, the inward protuberance of the external ear, being a semicircle within, and almost parallel to the helix.

ANTHELMIN'TICS, medicines proper to destroy worms.

ANTEPOSI'TION, a grammatical figure, whereby a word, which by the ordinary rules of syntax ought to follow another, comes before it.

AN'THER, that part of the stamen of a flower which is at the top of the filament, opening and discharging the pollen, or farina, when ripe.

ANTHE'SIS, in botany, efflorescence, or that state of vegetation in which the flower is completely developed.

ANTHESPHO'RIA, in antiquity, a Sicilian festival, instituted in honour of Proserpine.

ANTHESTE'RIA, in Grecian antiquity, festivals celebrated in the Spring by the Athenians, in honour of Bacchus, during which the masters feasted their slaves, as the Romans did in the time of the Saturnalia.

ANTHOL'OGY, a collection of choice poems, particularly a collection of Greek epigrams so called. The word in its original sense simply means a collection of flowers.

AN'THRACITE, in mineralogy, a valuable kind of coal, consisting wholly of carbon, mixed with a slight and variable proportion of oxyde of iron, silex, and alumina. It is inflammable with some difficulty, and burns without smell or smoke, leaving a more or less earthy residue. It is scarce in Europe, and consequently but little used; but in the United States of America, where it abounds, it has lately acquired a high degree of importance.

ANTHRACO'SIS OC'ULI, in medicine, a scaly corrosive ulcer in the eye.

ANTHROPOPHA'GI, or cannibals, persons who eat the flesh of men as well as animals. Abhorrent and unnatural as the practice is, there is no doubt that whole nations have been addicted to this practice, and that it still prevails in the South Seas.

ANTHROPHOLI'TUS, or ANTHROPHOLITES, petrefactions of human bodies, or parts of the body. Those of animals are called *zoolites*.

ANTHROPOL'OGY, the science which treats of human nature, either in a physical or an intellectual point of view.

ANTHROPOMOR'PHITE, one who ascribes a human figure and a bodily form to God.

AN'TI, a Greek particle, which enters into the composition of several words, both Latin, French, and English, and signifies opposite or contrary to, as in *antiscorbutics*.

ANTICAR'DIUM, in anatomy, that hollow part under the breast, just against the heart, called the pit of the stomach.

ANTI-CLI'MAX, in literary composition and oratory, when a writer or speaker suddenly descends from the great to the little.

ANTIDIAS'TOLE, in medicine, a discrimination of one disease or symptom from another.

AN'TIDOTE, a counter-poison, or any medicine generally that counteracts the effects of what has been swallowed.

ANTIL'OGY, an inconsistency between two or more passages of the same book.

ANTIMETAB'OLE, in rhetoric, a setting of two things in opposition to each other.

ANTIMETATH'ESIS, in rhetoric, an inversion of the parts or members of an antithesis.

AN'TIMONY, a metallic substance of a greyish white colour, considerable brilliancy, and strongly resembling tin, or silver. Its texture is laminated, and the laminæ appear arranged one over another, and crossing in every direction: its surface often exhibits a kind of crystal, in the form of stars, or fir-leaves. It is very brittle, and easily pulverized; melts, when heated just to redness. In its pure state it is called the regulus of antimony. Crude antimony, in commerce, is a metallic ore, consisting of the metal called antimony combined with sulphur.

ANTINO'MIANS, a sect who reject the moral law as a rule of conduct to believers; and who, regarding virtuous conduct as insufficient to deserve or obtain salvation, teach that no attention to its precepts is necessary.

ANTIP'ATHY, in physiology, a natural aversion of one body to another, in contradistinction to sympathy. In a more restricted sense, it is an involuntary aversion which an animated and sensitive being feels towards some object presented to it either in reality or imagination, although the person who feels this abhorrence is entirely ignorant of its cause, and can by no means account for it.

ANTI'PODES, the name given to those inhabitants of the earth who are diametri-

THE ANTELOPE, FROM THE EXQUISITE BEAUTY AND VIVACITY OF ITS EYES, IS A FAVOURITE IMAGE IN ORIENTAL POETRY.

SOME ASSERT THAT ANTHROPOLITES HAVE BEEN FOUND IN OLD MINES, BUT THE EXISTENCE OF SUCH PETRIFACTIONS IS NOT CREDITED.

PYROLIGNEOUS ACID, OR CONDENSED STEAM OF GREEN WOOD BAKED, IS THE MOST POWERFUL ANTISEPTIC IN THE VEGETABLE KINGDOM.

cally opposite to each other, as it were feet to feet. They have equal latitudes, the one north, and the other south; but opposite longitudes: consequently when it is day to the one, it is night to the other, and when summer to the one, winter to the other.

ANTIPHO'NA, or ANTIPH'ONY, in music, the answer made by one choir to another, when the psalm or anthem is sung verse for verse alternately.

ANTIPH'RASIS, in rhetoric, a figure of speech, or kind of irony, whereby we say a thing by denying what we ought rather to affirm it to be; as when we say, "he is no fool," we mean "he is a man of sense."

AN'TIQUARY, a person who studies and searches after monuments and remains of antiquity. There were formerly in the chief cities of Greece and Italy, persons of high distinction called antiquaries, who made it their business to explain the ancient inscriptions, and give every other assistance in their power to strangers who were lovers of that kind of learning.——The monks who were employed in making new copies of old books were formerly called *antiquarii*.

ANTIQ'UITIES, all such documents of ancient history as industrious and learned men have collected; genealogies, inscriptions, monuments, coins, names, etymologies, archives, mechanical instruments, fragments of history, &c. Antiquities form a very extensive science, including an historical knowledge of the ancient edifices, magistrates, habiliments, manners, customs, ceremonies, religious worship, and other objects worthy of curiosity, of all the principal nations of the earth. In England, we have British, Roman, Saxon, and Norman antiquities, many of which are highly interesting, and serve to throw a light on the manners and customs of the people.

ANTISABBATA'RIANS, a modern religious sect, who deny the necessity of observing the Sabbath, chiefly because it was a Jewish institution.

ANTIS'CII, or ANTIS'CIANS, in geography, the people who live on different sides of the equator, and have their shadows at noon fall directly opposite ways. ——Antiscii is also used among astrologers, for two points of the heavens equally distant from the tropics.

ANTISEP'TICS, in chemistry, remedies against putrefaction. Of all the antiseptics which have been discovered, none has been found so effectual as chloride of lime in arresting the progress of putrefaction, for when placed in contact with the affected parts, it destroys the offensive odour which they exhale, and prevents the extension of the corruption.

ANTISPASMOD'ICS, medicines proper for the cure of spasms and convulsions. Opium, balsam of Peru, and the essential oils of many vegetables, are the most useful.

ANTIS'TROPHE, the alternate verse in ancient poetry, which was divided into the *strophe* and *antistrophe*. In reciting their odes the chorus turned from the left to the right at the antistrophe, and *vice versa*.

ANTISYPHILIT'IC, a term applied to remedies used in cases of syphilis, the most efficacious of which are said to be preparations of mercury.

ANTITH'ESIS, in rhetoric, a figure of speech, by which two things are attempted to be made more striking, by being set in opposition to each other. "Antitheses, well managed," says Bohours, "give infinite pleasure in the perusal of works of genius; they have nearly the same effect in language as lights and shadows in painting, which a good artist distributes with propriety: or the flats and sharps in music, which are mingled by a skilful master." The beautiful antithesis of Cicero, in his second Catilinarian, may serve as an example: "On the one side stands modesty, on the other impudence; on the one fidelity, on the other deceit; here piety, there sacrilege; here continency, there lust," &c.

ANTITRINITA'RIANS, all those who deny the doctrine of the Trinity.

AN'TITYPE, among ecclesiastical writers, denotes a type corresponding to some other type or figure. In the Greek church it is also an appellation given to the symbols of bread and wine in the sacrament.

ANTŒ'CI, in geography, those inhabitants of the earth who live under the same meridian, but on different sides of the equator, and at equal distances from it.

ANTONOMA'SIA, a mode of speaking in which a person is addressed or described by some appropriate or official designation, but not by his surname; as, in the House of Lords, "the noble lord;" in the House of Commons, "the honourable gentleman."

A'NUS, in anatomy, the extremity of the *intestinum rectum*, or orifice of the fundament. Also a small cavity in the third ventricle of the brain.——Anus, in botany, signifies the posterior opening of a monopetalous flower.

AORIS'TIA, in the sceptic philosophy, denotes that state of the mind wherein we neither assert nor deny anything positively, but only speak of things as seeming or appearing to us in such a manner.

AOR'TA, or MAG'NA ARTE'RIA, the great artery proceeding from the left ventricle of the heart, from which all the other arteries proceed mediately or immediately. It is distinguished into the descending or ascending, according to the manner in which it runs.

AP'ATHY, a term expressive of an utter privation of passion, and an insensibility of pain. Thus, the stoics affected an entire apathy, so as not to be ruffled, or sensible of pleasure or pain.

APAU'LIA, in antiquity, the second day of the marriage festival, when the bride's departure from her father's house was celebrated. On this day the bridegroom presented the bride with a garment called *Apauleté'ria*.

APAU'ME, in heraldry, a hand opened, and the full palm appearing, with the thumb and fingers extended, as may be seen in the arms of a baronet.

APE, a name for different species of the monkey tribe, which are without tails or

THOSE WHO LIVE NORTH OF THE EQUATOR ARE ANTISCIANS TO THOSE WHO LIVE SOUTH, AND VICE VERSA.

cheek pouches. Like all the four-handed animals, the apes are destined to live among the branches of trees, and are especially adapted, from their size and strength, to occupy large forests. All of them have the power of assuming a nearly erect position. They generally live in troops, and some of the species are said to construct a sort of hut of leaves, as a defence against the weather. They defend themselves with clubs, and employ these weapons with considerable effect, even against man. Some of them, called *gibbons*, have arms of prodigious length. On the loftiest branches of the gigantic eastern forest trees, troops of these animals are seen sitting in perfect security, or springing from tree to tree, and swinging themselves to great distances by their long arms. There are various species, but the most terrible is the *orang-outang* of Africa. Lascivious, filthy, gluttonous, and ferocious, they offer to man an instructive lesson on the inestimable worth of that divine faculty with which his Creator beneficently endowed him; and which, while it controls the impulses of his organization, convinces him that he is made for a nobler end than the "brutes which perish."

APEAK'.—A ship is said to be *apeak*, when the cable is drawn so tight as to bring her directly over the anchor.

APE'NE, in antiquity, the chariot in which the images of the gods were carried on solemn occasions.

APEP'SIA, in medicine, a bad digestion; the more usual term for which is *dyspepsia*.

APE'RIENTS, in the materia medica, an appellation given to such medicines as facilitate the circulation of the juices, by removing all obstructions.

AP'ERTURE, in optics, a hole next to the object-glass of a telescope.——In architecture, an opening in any building, as a window, door, &c.——In geometry, the opening or angle formed by the meeting of two right lines.

APET'ALOUS, in botany, a term for plants whose flowers have no flower leaves or corolla; as the hippuris, or fox-tail grass.

A'PEX, in its general sense, is the top, summit, or highest degree of anything.—— In antiquity, a little woollen tuft on the cap of the flamen, or high priest.——In mathematics, the angular point of a cone or conic section.

APHÆRE'SIS, in grammar, the taking away a letter or syllable from a word.—— In surgery, it signifies an operation whereby something is taken away that is superfluous.

APHE'LION, in astronomy, that point at which the earth, or any planet, is at the greatest distance from the sun.

APHEL'LAN, in astronomy, the name of a bright star in the constellation Gemini.

A'PHIS, in entomology, the general name for a very extensive genus of insects of the Linnæan order *hemiptera*, called also plant-louse, vine-fretter, &c. The aphis has four erect wings, or none at all; its trunk is reflex; and the body is formed into two horns behind. It has been generally believed that each species is attached to one kind of vegetable only. They abound with a sweet and grateful moisture, and are, therefore, eagerly devoured by ants, the larva of coccinellæ, and many other creatures, or they would very probably become more destructive to the whole vegetable creation than any other race of insects. The production of this moisture, generally called honey-dew, and their equivocal generation, are the circumstances which have attracted the particular attention of modern naturalists, and in which they seem to be distinguished from all other parts of the animal world. Numerous experiments have been tried, and it is now ascertained that the male aphides are produced only in the tenth generation, and are but few in number; that these, soon arriving at their full growth, copulate with the females; that the virtue of this copulation is not exhausted at least until the tenth generation; that all these generations, except the first from the fecundated eggs, are produced viviparous; and all the individuals are females, except those of the last generation, among whom some males make their appearance, to lay the foundations of a fresh series. But the excremental fluid voided by these insects is equally extraordinary. The honey-dew of plants is nothing more than this secretion: it neither falls from the atmosphere, nor issues from the plant itself; for wherever honey-dew is observable upon a leaf, aphides will be found on the underside of the leaf or leaves immediately above it, and under no other circumstance whatever. Among them is the *aphis rosæ*, found in great numbers on the leaves, stalks, and buds of roses; and the *common green aphis*, which is called *the fly* when it infests hop-gardens.

APH'ODOS, in medicine, the recrements of the aliment which pass off by stool.

APHO'NIA, in medicine, a deprivation of voice, or palsy of the tongue.

APH'ORISM, a maxim or principle of a science; or a sentence which comprehends a great deal in a few words. The aphoristic method has great advantages, as containing much matter in a small compass; sentiments are here almost as numerous as expressions; and doctrines may be counted by phrases.

APHRAC'TA, in antiquity, open vessels which were used in naval engagements.

APHRI'TE, a mineral substance, so called from its frothy appearance; silvery chalk.

APH'THÆ, in medicine, the thrush; small, round, and superficial ulcers arising in the mouth. The principal seat of this disease, is the extremity of excretory vessels, salival glands, &c.

APHTHAR'DOCITES, or APHTHARDOCE'TÆ, a sect of heretics which branched off from the Eutychians in the sixth century. They denied the passion of our Saviour, maintaining that his body was immortal from the moment of his conception.

APH'YLLOUS, in botany, an epithet applied to the stem or leaf of a flower; as *aphyllus caulis*, a leafless stem; *aphyllus flos*, a flower having no calyx.

THE NAVAL ORNAMENT, CALLED AN APLUSTRE, WAS SOMETIMES SHAPED LIKE A PLUME OF FEATHERS, AND FASTENED ON A SWAN'S NECK.

A'PIARY, a place where bees are kept, which should be selected with great care. It should be sheltered from the wet as well as from the extremes of heat and cold; it should face the south, be defended from high winds, and not within the sphere of offensive smells, or liable to the attacks of any hostile vermin.

A'PIS, in entomology, a genus of four-winged insects, with wings entirely membranaceous, and their tails furnished with a sting; comprehending the bee, hornet, wasp, and humble-bee.——In mythology, *apis* was the name of a bull to which divine honours were paid by the Egyptians, chiefly at Memphis.

APLANAT'IC, in optics, a term applied to that kind of refraction which completely corrects the aberration of the rays of light, and the colour depending thereon, in contradistinction to *achromatic*, in which there is only a partial correction of colour.

APLUS'TRE, or APLUS'TRIA, in the naval architecture of the ancients, an ornament resembling a shield fixed in the poop of a ship, in which case it differed from the acrostolium.

APOC'ALYPSE, the Greek name of the last book of the New Testament, so called from its containing revelations concerning several important doctrines of Christianity. It is generally attributed to the apostle St. John, who wrote it in the isle of Patmos, whither he had been banished by the emperor Domitian; though there have not been wanting those who ascribe it to other authors, and even wholly reject it as spurious. On account of its metaphorical language, the Apocalypse has been explained differently by almost every writer who has ventured to interpret it; and for the same reason it is one of those parts of the Bible which has furnished all sorts of sects and fanatics with quotations to support their creeds or opinions. But in the metaphors and symbolical expressions with which the Apocalypse abounds, the author seems to have had in view the then existing state of the church of Christ, and its future prospects.

APOC'OPE, in grammar, a figure by which the last letter or syllable of a word is cut off.

APOC'RYPHA, in theology, certain books of doubtful authority which are not received into the canons of holy writ; being either spurious, or not acknowledged as of divine origin.

APODIC'TICA, in rhetoric, an epithet for arguments which are fitted for proving the truth of any point.

APODIOX'IS, in rhetoric, a figure whereby we either pass over a thing slightly, or reject it as unworthy of notice.

APODIX'IS in rhetoric, an evident demonstration.

APOD'OSIS, in rhetoric, the latter part of a complete exordium, or application of a simile.

AP'ODES, the name of one of the orders of fishes in the Linnæan distribution of animals. Their leading characteristic is, that they have no ventral fins. There are twelve genera, among which is the eel tribe.

APOGEE', in astronomy, that point of the orbit at which the sun, moon, or any planet is most distant from the earth. This term, as well as the *perigee*, was most in use among the ancients; modern astronomers, making the sun the centre of the universe, mostly use the terms *aphelion* and *perihelion*.

AP'OGRAPH, a copy or transcript of some book or writing. It is opposed to *autograph*.

APOL'IDES, in Roman history, those who were banished to some remote part, and condemned to hard labour, with the loss of citizenship.

APOLLINA'RES, LU'DI or APOLLINARIAN GAMES, in Roman antiquity, were instituted U. C. 542. They were celebrated in honour of Apollo, by a decree of the senate, in consequence of a prediction of the prophet Marcius relative to the battle of Cannæ.

APOLLINA'RIANS, in church history, a sect of heretics, who maintained that Jesus Christ had neither a rational human soul, nor a true body.

APOL'LO BEL'VIDERE, an ancient marble statue of Apollo most exquisitely finished. It was found in the ruins of Antium, in the 15th century, and placed in the Belvidere gallery of the Vatican palace at Rome.

APOLLO'NIA, in antiquity, an annual festival celebrated by the Ægialians in honour of Apollo.

AP'OLOGUE, a poetical fiction, the purpose of which is the improvement of morals. Some writers are of opinion, that this term ought to be confined to that species of fable in which brute or inanimate things, as beasts or flowers, are made to speak; but this distinction, so far from being followed, is generally reversed. It is, in reality, more usual to give the name of apologue where human actors only are introduced.

APOL'LYON, a name in Scripture given to the devil, or angel of the bottomless pit.

APOPH'ASIS, a figure of speech in which the orator briefly alludes to, or seems to decline stating, that which he wishes to insinuate.

APOPHLEG'MATISM, a medicine to promote the carrying off phlegmatic humours.

APOPHORE'TA, in antiquity, presents made to the guests at feasts, or other entertainments, which they carried away with them.

APOPH'RADES, in medicine, an epithet for the day in which a disorder comes to the crisis.

AP'OPHTHEGM, or AP'OTHEGM, a short, sententious, and instructive remark, especially if pronounced by a person of distinguished character.

APOPH'YAS, in medicine, the ramification of the veins.

APONEURO'SIS, in surgery, the extension of a nerve or tendon. The same term is also used for the cutting off a nerve, &c.

APOPH'YSIS, in anatomy, an excres-

THE APOLLINARIAN GAMES WERE MERELY SCENICAL, WITH EXHIBITIONS OF MUSIC, DANCING, AND PANTOMIMIC TRICKS.

A COLLECTION OF RULES AND PRECEPTS, CALLED "APOSTOLIC CONSTITUTIONS," APPEARED IN THE 4TH CENTURY, BUT ARE SUPPOSED TO BE SPURIOUS.

cence from the body of a bone, of which it is a true continuous part, as a branch is of a tree.

APOPH'YGE, in architecture, the part of a column where it springs out of its base.

APOPH'YLLITE, a mineral of foliated structure and a peculiar pearly lustre. When a fragment is forcibly rubbed against a hard body, it separates into thin lâminæ.

AP'OPLEXY, a disorder in which the patient is suddenly deprived of the exercise of all the senses, and of voluntary motion; while a strong pulse remains with a deep respiration, attended with a stertor, and the appearance of a profound sleep. From the appearance of every symptom, there is scarcely room to doubt that complete apoplexy is produced by the pressure of blood (whether extravasated or not) upon the brain; and it is most usually found to accompany persons of a full habit of body, who have a short neck and a system disposed to a too copious sanguification.

APOPLEC'TA, in anatomy, the internal jugular vein.

APOS'TACY, is the quitting any system of thinking or acting, good or bad: but the word is generally used, in a reproachful sense, of one who has changed his religious opinions.

A POSTERIO'RI, in logic, a mode of reasoning from the effect to the cause.

APOSTAX'IS, in medicine, any defluxion, but particularly of blood from the nose.

APOS'TLE, properly signifies a person delegated or sent by another upon some business; and hence, by way of eminence, denotes one of the twelve disciples commissioned by Jesus Christ to preach the gospel.

APOSTOL'IC, or APOSTOL'ICAL, an epithet for what pertained to the apostles, their doctrine, &c. It is now applied by the catholics to the Romish church only, as the *apostolic see, an apostolic brief, &c.*

APOS'TROPHE, a figure of speech, by which the orator turns from his subject to address a person either absent or dead, as if he were present.——APOSTROPHE, in grammar, a mark of contraction in a word; thus, lov'd for loved.

APOTHE'OSIS, deification, or the ceremony of placing among the gods, which was frequent among the ancients. It was one of the doctrines of Pythagoras, which he had borrowed from the Chaldees, that virtuous persons, after their death, were raised into the order of the gods. And hence the ancients deified all the inventors of things useful to mankind, and who had done any important service to the commonwealth. This honour was also conferred on several of the Roman emperors at their decease.

APOTH'ESIS, in surgery, the placing of a fractured limb in the position in which it ought to remain.

APOTOME, in music, the difference between the greater and the less semitone, being expressed by the ratio of 128 to 125.

APPARA'TUS, the component parts of machinery; or a set of instruments or utensils necessary for practising any art.

APPAR'ENT, in a general sense, something that is visible to the eyes, or obvious to the understanding.——APPARENT, among mathematicians and astronomers, denotes things as they appear to us, in contradistinction from what they really are: thus we say, the apparent diameter, distance, magnitude, place, figure, &c. of bodies.——APPARENT *conjunction of the planets*, is when a right line, supposed to be drawn through their centres, passes through the eye of the spectator, and not through the centre of the earth. And, in general, the apparent conjunction of any objects, is when they appear, or are placed in the same right line with the eye.——APPARENT, in law, is an epithet for an heir, whose right of inheritance is indefensible; as the heir *apparent;* or immediate heir to the crown, in distinction from the heir *presumptive*

APPARI'TION, a term used for an effect by which the mind operates on the sense, instead of the sense on the mind; or when the sense is diseased and transmits false ideas to the mind; two causes which have been the fruitful source of numberless superstitions and tales among the credulous and ignorant. Hence the idea of ghosts, spectres, and supernatural visions.——APPARITION, in astronomy, signifies a star or other luminary's becoming visible, which before was hid. It stands opposed to occultation. The circle of apparition is an imaginary line, within which the stars are always visible in any given latitude.

APPARITO'RES, among the Romans, a general term to comprehend all attendants of judges and magistrates appointed to receive and execute their orders.——APPARITOR, in English law, is a messenger that serves the process of a spiritual court.

APPEAL', in law, the removal of a cause from an inferior to a superior court or judge, when a person thinks himself aggrieved by the sentence of the inferior judge. Appeals lie from all the ordinary courts of justice to the House of Lords.

APPEAR'ANCE, in perspective, the projection of a figure or body on the perspective plane.——In astronomy, the same as phenomenon, or phasis.——In law, it signifies a defendant's filing a common or special bail, on any process issued out of a court of judicature.

APPEL'LANT, or APPEL'LOR, in law, he who makes or brings an appeal. It was formerly much used for one who brought an appeal in a criminal prosecution.

APPEL'LATIVE, in grammar, a noun or name applicable to a whole species or kind, as, a man, a horse.

APPELLEE', in law, he of whom the appeal or accusation is made.

APPEN'DANT, in law, any thing that is inheritable, belonging to some more worthy inheritance; as an advowson, common, or court, may be appendant to a manor, land to an office, &c

APPENDIC'ULATE, in botany, appended at the extremity; as *petiolus appendiculatus*, a petiole that has a small leaf or leaves at the base.

THE PROCESS OF "APPEAL" WAS ANCIENTLY GIVEN TO A PRIVATE PERSON, TO OBTAIN PECUNIARY SATISFACTION FOR A PERSONAL INJURY.

APPEN'DIX, in literature, a treatise or supplement added at the end of a work, to render it more complete.

APPLICATION, in geometry, is used either for division, for applying one quantity to another, whose areas, but not figures, shall be the same; or, for transferring a given line into a circle, or other figure, so that its end shall be in the perimeter of the figure.——Application of one science to another, is the use made of the principles of the one in perfecting the other: as in the application of algebra and geometry to mechanics; of mechanics to geometry; of geometry and astronomy to geography; of geometry and algebra to natural philosophy.——Application, in medicine, any communication to the body, externally or internally, by way of a remedy.

APPOGIATU'RA, in music, a small note inserted by the practical musician, between two others, at some distance; or a note inserted by way of embellishment.

APPOSI'TION, in grammar, the placing two or more substantives together, without any copulative between them, as, Wellington, the conqueror.

APPRAIS'ING, the valuing or setting a price on goods. Appraisers are sworn to value goods fairly; for which reason they are often termed *sworn* appraisers.

APPREHEN'SION, in logic, the first or most simple act of the mind, whereby it perceives, or is conscious of some idea: it is more usually called perception.

APPREN'TICE, a young person bound by indentures or articles of agreement to a tradesman or artificer, to learn his trade or mystery.

APPROACH'ES, in fortification, the works thrown up by the besiegers, in order to get nearer a fortress without being exposed to the enemy's cannon.

APPROPRIA'TION, in ecclesiastical law, the annexing a benefice to the proper and perpetual use of a religious house, bishopric, college, &c.; in the same way as *impropriation* is the annexing a benefice to the use of a lay person, or corporation; that which is an appropriation in the hands of religious persons, being usually called an impropriation in the hands of the laity.

APPRO'VER, in law, one who, confessing that he has committed a felony, accuses one or more of his accomplices.

APPROX'IMATE, in botany, an epithet for a leaf; *approximatum folium*, a leaf that stands close to the stem.

APPROXIMA'TION, in a general sense, the getting near to an object.——In mathematics, a continual approach to a root or quantity sought, but not expected to be found.

AP'PULSE, in astronomy, the approach of a planet towards a conjunction with the sun or any of the fixed stars.

APPUI', in the manege, the sense of the action of the bridle in the horseman's hand. Thus a horse has *no appui*, when he cannot suffer the bit to bear even slightly upon the parts of the mouth; or *too much appui*, when he throws himself too much upon the bit, &c.——Appui, in the military art, is a term for any particular given point or body upon which troops are formed, or by which they are marched in line or column.

A'PRIL, the fourth month of the year, according to European computation. The word is derived from the Latin *aprilis*, or *aperio*, I open; because in this month the leaves and blossoms open.

A PRIO'RI, a mode of reasoning from the cause to the effect.

AP'SIDES, or AP'SES, in astronomy, the two points of a planet's orbit in which it is at its greatest and least distance from the sun; and the line which joins them, is called the line of apsides.

AP'TERA, the seventh order of insects, without wings or transformation. This includes spiders, fleas, bugs, termites, earwigs, &c.; and, also, lobsters, crabs, prawns, and shrimps.

A'PUS, in astronomy, a constellation near the north pole.——In ornithology, a species of hirundo, commonly known by the name of swift, or black marten.

APYREX'IA, in medicine, the abatement of a fever.

A'QUA, a Latin word, much used in chemistry, signifying water. It is an insipid, ponderous, transparent, colourless, uninflammable, and fluid body, formed by the union of oxygen and hydrogen.——Aqua Pura, pure or common water, is distinguished into *Aqua pluvia*, rain-water; *Aqua fontana*, spring-water; *Aqua puteana*, well-water; *Aqua fluvialis*, river-water; *Aqua nivalis*, snow-water; *Aqua palustris*, marsh-water; *Aqua marina*, sea-water; and *Aqua mineralis*, mineral-water.

AQUAFORTIS, the common name of nitric acid.

AQUA RE'GIA, a combination of nitric and muriatic acids, so called, because it dissolves gold: it will also dissolve iron, copper, tin, mercury, regulus of antimony, bismuth, and zinc. It is now generally called *nitro-muriatic acid*.

AQUA VI'TÆ, a name familiarly (though most absurdly) applied to ardent spirits, answering to the *eau de vie* or brandy of the French.

AQUATIN'TA, a style of engraving, or rather etching, by which an effect is produced similar to that of a drawing in Indian ink.

AQUA'RIUS, in astronomy, a constellation, which makes the eleventh sign in the zodiac. It is said to have been called Aquarius, or the water-bearer, because when it appears in the horizon, the weather usually proves rainy. The stars in this constellation, in Ptolemy's catalogue, are 45; in Tycho's, 41; in Hevelius's, 47; in Flamsteed's, 108.

AQUAT'IC, in natural history, an appellation given to such things as live or grow in the water: thus we say, aquatic animals, aquatic plants, &c.

AQ'UEDUCT, a conduit of water, is a construction of stone or timber, built on uneven ground, to preserve the level of water, and convey it, by a canal, from one

place to another. There are aqueducts under ground, and others raised above it supported by arches. The Romans were very magnificent in their aqueducts. In the time of the emperor Nerva there were nine, which emptied themselves through 13,594 pipes of an inch diameter. That constructed by Louis XIV. for carrying the Bucq to Versailles, is 7000 fathoms long, with 2560 fathoms of elevation, and contains 242 arcades. The three chief aqueducts now in being, are those of the Aqua Virginea, Aqua Felice, and Aqua Paulina.——AQUEDUCT, in anatomy, a term applied by anatomists to certain canals, on account of their form or use.

AQ'UILA, in astronomy, a constellation of the northern hemisphere.——The Eagle (*Aquila*) was reckoned by the ancients not only the king of the birds, but the minister of Jupiter, who is said to have carried Ganymede up into heaven in the form of an eagle. It was also chosen as the symbol of empire, first by the Persians, and afterwards by the Romans, in consequence of which the eagle is represented on coins in a variety of forms. But the most frequent representation of the eagle was that of the *Aquila legionaria*, (which the Romans chose as their ensign) an eagle, with expanded wings, and made either of gold or silver.

AQ'UILÆ, in anatomy, the veins which pass through the temples into the head.

AQUILA'RIA, in botany, eagle-wood, a large tree; class, *decandria;* order, *monogynia*. This tree is a native of the mountains of Cochin China and Malacca. The wood has been long used as a perfume; and was formerly an article of the materia medica, under the name of agallochum, and lignum aloes.

AQUILE'GIA, COLUMBINE, a plant so called from *aquila*, an eagle, because of the resemblance its nectaries are supposed to bear to the eagle's claws.

AQ'UILO, the north-west wind; so called from its rapidity and vehemence resembling the flight of an eagle.

AR'ABESQUE, or MORESQUE, a style of ornament in painting and sculpture, so called from the Arabians and Moors, who rejected the representation of animals.

AR'ABIC FIGURES, the numeral characters now used in our arithmetic, which were borrowed from the Arabians, and introduced into England about the eleventh century.

AR'ABIC, or GUM ARABIC, a transparent gum which exudes from the Egyptian acacia.

ARAB'ICUS LA'PIS, in mineralogy, a stone like ivory blemished with spots.

ARABO-TEDES'CO, a style of architecture, in which the Moorish and Gothic are combined.

ARACHNOI'DES, in zoology, a name given to those *echini marini*, or sea-hedgehogs, which are of a circular form, but variously indented at the edges.——ARACHNOIDES, in anatomy, an appellation given to several different membranes, as the tunic of the crystalline humour of the eye, the external lamina of the pia mater, and one of the coverings of the spinal marrow.

AR'ACK, AR'RAC, or RACK, a spirituous liquor imported from the East Indies, used in making punch. It is procured by distillation from a vegetable juice called toddy, which flows by incisions out of the cocoa-nut tree. But the word arack appears to be an Indian name for strong liquor of any kind, whether distilled from the juice of the cocoa-nut, or from sugar, rice, &c.

ARA'NEA, in entomology, the SPIDER, a genus of insects belonging to the order *aptera*, or insects without wings. Spiders have five tubercles or papillæ at the extremity of the belly, whose apertures they can enlarge or contract at pleasure; and it is through these they spin a gluey substance, of which their bellies are full. They fix the end of their threads by applying these papillæ to any substance, and the thread lengthens in proportion as the spider recedes from it. The whole workmanship of a spider's web is most curious; but the darting out of long threads, which has been observed by naturalists, and by means of which some spiders can convey themselves to great distances, deserves particular notice. Dr. Lister remarks, that while he was attending closely to a spider weaving a net, he observed it suddenly to desist; and turning its tail to the wind, it darted out a thread with the violence and stream we see water spout out of a jet: this thread, taken up by the wind, was immediately carried to some fathoms long; still issuing out of the belly of the insect. By-and-by the spider leaped into the air, and the thread mounted her up swiftly. He made a similar observation on near thirty different species of spiders; and found the air filled with young and old, sailing on their threads, and doubtless seizing gnats and other insects in their passage, there being often manifest signs of slaughter, legs and wings of flies, &c. on these threads, as well as in their webs below. It is scarcely credible to what height they will mount; but in fair calm weather during autumn, if a person will fix his eye some time on any part of the heavens, he may perceive the white webs, at a vast distance, very distinctly appearing from the azure sky. Leuwenhoek has computed that 100 of the single threads of a full-grown spider are not equal to the diameter of the hair of his beard; and consequently, if the threads and hair be both round, ten thousand such threads are not bigger than such a hair. He calculates farther, that when young spiders first begin to spin, 400 of them are not larger than one of a full growth; allowing which, 4,000,000 of a young spider's threads are not so big as the single hair of a man's beard! Our limits will not permit us to particularize the different species; but there is one which deserves to be mentioned for its size and strength, called ARANEA AVICULARIA, or Bird-catching Spider, a gigantic species, not uncommon in the East Indies, where it is of sufficient size to seize on small birds, which it destroys by wounding with its fangs.

"AQUA MARINA" IS A NAME WHICH JEWELLERS GIVE TO THE BERYL, ON ACCOUNT OF ITS SEA-GREEN COLOUR.

THE WORD ARCANUM IS GENERALLY USED IN THE PLURAL, "ARCANA," AND SIGNIFIES SECRET THINGS OR MYSTERIES.

CERTAIN PLANTS ARE SAID TO HAVE TREE-LIKE AND ARBORESCENT STEMS; BECAUSE, THOUGH AT FIRST HERBACOUS, THEY BECOME WOODY.

ARÆOM'ETER, an instrument wherewith to measure the density or gravity of fluids. The aræometer, or water poise, is usually made of glass; consisting of a round hollow ball, which terminates in a long slender neck, hermetically sealed at top: there being at first as much quicksilver put into it as will serve to balance, or keep it swimming in an erect position. The stem, or neck, is divided into degrees or parts, which are numbered, to show, by the depth of its descent into any liquor, the lightness or density of it: for that fluid is heaviest in which it sinks least, and lightest in which it sinks deepest.

AR'BITER, in civil law, a judge appointed by the magistrate, or chosen by the parties to decide any point of difference. An arbiter must judge according to usages of the law, but the arbitrator is permitted to use his own discretion, and accommodate the difference in the manner that appears to him most just and equitable.

ARBITRA'TION, or ARBIT'REMENT, a power given by two or more contending parties to some person or persons to determine the dispute between them.

AR'BOR, in mechanics, the principal part of a machine which serves to sustain the rest: also the axis or spindle on which a machine turns.

AR'BOR DIAN'E, or Silver Tree, is the result of an experiment in chemistry, by which the branches and figure of a tree are represented by an amalgam of silver and mercury, which appear to vegetate in a very beautiful manner. The experiment is thus performed. Take one part of silver, and with it saturate a certain portion of nitrous acid: this is to be diluted with 20 parts of clean water, and poured upon two parts of mercury. After a short time a crystallization will take place, in the shape of a tree, with its branches, &c.

AR'BOR SCIEN'TIÆ, a general distribution or scheme of science, or knowledge.

A'RÆOSTYLE, in architecture, a sort of intercolumniation, in which the columns are at a distance from each other.

ARBORES'CENT, a term applied to all such things as resemble trees; thus we read of arborescent shrubs, arborescent animals, &c of which last kind is that great natural curiosity the star-fish.

AR'BORIST, a person skilled in that part of botany which treats of trees.

AR'BOR VI'TÆ, an evergreen shrub.

ARBU'TUS, the strawberry-tree; a beautiful shrub, bearing a red roundish berry.

ARC, any part of a curve line, as of a circle, ellipse, &c.

ARC, or ARCH DIURNAL, in astronomy, that part of a circle described by a heavenly body, between its rising and setting. The nocturnal arch is that which is described between its setting and rising.

ARCA'NUM, among physicians, any remedy, the preparation of which is industriously concealed, in order to enhance its value.

ARCH, a concave building with a mould bent in form of a curve, erected to support some structure. Arches are either circular, elliptical or straight, as they are improperly called by workmen. Elliptical arches consist of a semi-ellipsis, and have commonly a key-stone and imposts; they are usually described by workmen on three centres. Straight arches are those used over doors and windows, and having plain straight edges, both upper and under, which are parallel, but both the ends and joints point towards a centre. The term arch is peculiarly used for the space between the two piers of a bridge, for the passage of water, vessels, &c.——TRIUMPHAL ARCH, a stately gate of a semicircular form, adorned with sculpture, inscriptions, &c. erected in honour of those who had deserved a triumph. ——ARCH, as a syllable prefixed to another word, denotes the highest degree of its kind, whether good or bad; as *archangel, archduke, archbishop, archfiend*, &c. Many of the highest offices in different empires have this syllable prefixed to them.

AR'CHAISM, any antiquated word or phrase. The use of archaisms, though generally objectionable, occasionally add to the beauty and force of a sentence.

ARCHBISH'OP, a metropolitan prelate, having several suffragan bishops under him. In England there are two archbishops—the archbishop of Canterbury, who is primate of *all* England; and the archbishop of York, who is only styled primate of England. The first establishment of archbishops in England, according to Bede, was in the time of Lucius, said to be the first Christian king in Britain; but the first archbishop of Canterbury was Austin, appointed A.D. 598, by Ethelbert, when he was converted. An archbishop consecrates the inferior diocesans, as those ordain priests and deacons, and when invested with his dignity, he is said to be enthroned; a term which probably originated with that period of English history, in which the archbishop of Canterbury had some of the privileges of absolute royalty.

ARCHDEA'CON, an ecclesiastical officer, next in rank below a bishop. Every diocese has one, and the generality more. They are usually appointed by their diocesans; but their authority is independent. They visit the clergy, and have courts for the punishment of offenders by spiritual censures, and for hearing all other causes that fall within ecclesiastical cognizance.

ARCH'ERY, the art of shooting with the bow and arrow. Since the introduction of gunpowder, the arrow has ceased to be employed as an offensive weapon: but in former times it was reckoned of the utmost importance to the military strength of this kingdom. The practice of archery was followed both as a recreation and a service, and Edward III. prohibited all useless games that interfered with the practice of it on holidays and other intervals of leisure. By an act of Edward IV. every man was to have a bow of his own height, to be made of yew, hazel, or ash, &c.; and mounds of earth were to be made

AN ARCHANGEL IS ONE OF THE HIGHEST ORDER OF ANGELIC BEINGS, OCCUPYING THE EIGHTH RANK IN THE CELESTIAL HIERARCHY.

ARCHES-COURT WAS ANCIENTLY HELD IN ST. MARY LE BOW CHURCH, BUT NOW, LIKE THE OTHER SPIRITUAL COURTS, AT DOCTOR'S COMMONS.

in every township, for the use of the inhabitants. Indeed, it appears from the use made of the bow by the English at the battles of Cressy, Agincourt, and Poictiers, that their claim to be considered the best of modern archers can scarcely be disputed. If we look to archery as a pastime, or a healthful exercise, it has the sanction of Galen, as being sufficiently active, and not too violent; and if we consider that, in addition to its giving a salutary and moderate exertion to the muscles, it is extremely interesting to the mind when attended with competition, we cannot but be pleased to see that it has become as fashionable as it is healthful.

ARCH'ES, or COURT OF ARCHES, the supreme court belonging to the archbishop of Canterbury, to which appeals lie from all the inferior courts within his province.

AR'CHETYPE, the first model of a work, which is copied after to make another like it. Among minters it is used for the standard weight by which the others are adjusted.——The *archetypal world*, among Platonists, means the world as it existed in the idea of God, before the visible creation.

AR'CHIL, a violet red paste used in dyeing, prepared, by the aid of muriate of ammonia, from the *lichen rocellus*.

AR'CHITECT, one who is skilled in architecture. The architect forms plans and designs for edifices, conducts the work, and directs the artificers employed in it.

AR'CHITECTURE, the art of inventing and drawing designs for buildings, or the science which teaches the method of constructing any edifice for use or ornament. It is divided into *civil*, *military*, and *naval;* according as the erections are for civil, military, or naval purposes; and for the sake of convenience, other divisions are sometimes introduced. Architecture appears to have been among the earliest inventions, and its works have been commonly regulated by some principle of hereditary imitation. Whatever rude structure the climate and materials of any country have obliged its early inhabitants to adopt for their temporary shelter, the same structure, with all its prominent features, has been afterwards in some measure kept up by their refined and opulent posterity. To Greece we are indebted for the three principal orders of architecture, the *Doric*, the *Ionic*, and the *Corinthian;* Rome added two others, both formed out of the former, the *Tuscan* and the *Composite*. Each of these has a particular expression; so that a building, or different parts of a building, may be rude, solid, neat, delicate, or gay, accordingly as the Tuscan, the Doric, the Ionic, the Corinthian, or the Composite are employed. The columns of these several orders are easily distinguishable to common observers, by reason of the ornaments that are peculiar to their capitals; but the scientific difference consists in their proportions. The Tuscan order is characterized by its simplicity and strength. It is devoid of all ornament. The Doric is enlivened with ornaments in the frize and capital. The Ionic is ornamented with the volute scroll, or spiral horn: its ornaments are in a style of composition between the plainness of the Doric, and the richness of the Corinthian. The Corinthian order is known by its capital being adorned with two sorts of leaves; between these rise little stalks, of which the volutes that support the highest part of the capital, are formed. The Composite is nearly the same as the Corinthian, with an addition of the Ionic volute. In their private buildings the Roman architects followed the Greeks; but in their public edifices they far surpassed them in grandeur. During the dark ages which followed the destruction of the Roman empire, the classic architecture of Greece and Rome was lost sight of, but was again revived by the Italians at the time of the restoration of letters. The *Gothic style* was so called because it was first used by the Visigoths; but at first it was vastly inferior to that which we now call Gothic, and which exhibits grandeur and splendour, with the most accurate execution. The *Saxon* and *Norman styles* were so called because they were respectively used by the Saxons before the Conquest, and by the Normans after, in the building of churches. The Saxon style was distinguished by the semicircular arch, which they seem to have taken partly from the Romans, and partly from their ancestors on the continent. The Norman was distinguished by the following particulars: the walls were very thick, generally without buttresses; the arches, both within and without, semicircular, and supported by very plain and solid columns. These two styles continued to be the prevailing modes of building in England until the reign of Henry II., when a new mode was introduced, which was called *modern Gothic*. Whether this was purely a deviation from the other two modes, or whether it was derived from any foreign source, is not known. It is, however, supposed to be of Saracenic extraction, and to have been introduced by the crusaders. The style is distinguished by its numerous buttresses, lofty spires and pinnacles, large and ramified windows, with a profusion of ornaments throughout. In the fifteenth and sixteenth centuries the taste for Greek and Roman architecture revived, and brought the five orders again into use, although for sacred edifices the Saxon and Gothic styles still maintain the pre-eminence.

AR'CHITRAVE, in architecture, that part of a column, or order of columns, which lies immediately upon the capital; being the lowest member of the entablature. Over a chimney, this member is called the mantle-piece; and over doors or windows, the hyperthyron.

AR'CHIVAULT, in architecture, the inner contour of an arch, or a frame set off with mouldings, running over the faces of the arch stones, and bearing upon the imposts.

ARCHIVES, ancient records, or charters which contain titles, pretensions, pri-

THE WORD "ARCHITECTONICS" IS SOMETIMES USED FOR THE SCIENCE OF ARCHITECTURE; BUT IT SOUNDS PEDANTIC, AND IS UNNECESSARY.

vileges, and prerogatives of a community, family, city, or kingdom.

AR'CHON, the chief magistrate of the city and commonwealth of Athens.

ARC'TIC, Northern; lying under the *arctos*, or bear. In astronomy, the *arctic* or *north pole*, is that which is raised above our horizon, and is nearly pointed out by the last star in the tail of Ursa minor. The *arctic circle* is a lesser circle of the sphere parallel to the equator, and distant 23° 28′ from the north pole. This and the *antarctic* are often called polar circles, and may be conceived to be described by the motion of the poles of the ecliptic round those of the equator.

ARC'TOS, or ARC'TUS, in astronomy, the Greek name for the *Ursa major* and *minor*, or the great and little Bear.

ARCTU'RA, in medicine, inflammation of the finger or toe, from the curvature of the nail.

ARCTU'RUS, a fixed star of the first magnitude, in the constellation of Arctophylax or Boötes.

ARCUA'TION, in horticulture, the raising of trees by layers.——ARCUATION, in surgery, a distortion or incurvation of the bones.

ARCUBALIS'TA, a cross-bow; a term which has been contracted both into *Balista* and *Arbalist*.

ARDAS'SINES, a very fine sort of Persian silk; the finest used in the looms of France.

ARDE'SIA, in mineralogy, a genus of argillaceous earths, consisting of alumina, silica, &c.

A'REA, the site or space of ground on which any building is erected; but more generally applied to the open space at the bottom of a house.——AREA, in geometry, the superficial contents of any figure, as a triangle, quadrangle, &c.——AREA, in mineralogy, the mass dug from the mines, or the place where it is dug.

ARE'CA, an Indian nut, the fruit of a kind of palm-tree, which the natives roll up in a betel leaf, and chew to help digestion.

ARE'NA, in Roman antiquity, that part of the amphitheatre where the gladiators fought: so called from its being always strewed with sand, to conceal from the view of the people, the blood spilt in the combat.——ARENA, in mineralogy, a genus of earths of the siliceous order.

A'REOLA, the coloured circle surrounding the nipple of the breast.

ARENA'TIO, a kind of dry bath, wherein the patient sat with his bare feet on hot sand.

AREOP'AGUS, a sovereign tribunal at Athens, famous for the justice and impartiality of its decrees. It was in the town, on a rock or hill opposite to the citadel. There are some remains of the areopagus still existing in the middle of the temple of Theseus, which was heretofore in the middle of the city, but is now without the walls.

AR'GAL, or AR'GOL, crude tartar, in the state in which it is taken out of empty wine-vessels.

AR'GENT, in heraldry, the white colour in the coats of arms of baronets, knights, and gentlemen.

AR'GENTINE, in mineralogy, a subspecies of carbonate of lime, of a shining pearly lustre.

AR'GIL, in mineralogy, white clay; an unctuous kind of earth, of which earthenware is made.

ARGILLA'CEOUS EARTH, the earth of clay, called in chemistry *alumina*, because it is obtained in greatest purity from alum. Argillaceous earths are the basis of earthenware.

AR'GO NA'VIS, in astronomy, a constellation, called after the ship of Jason and his companions.

AR'GONAUTS, in Grecian antiquity, a company of illustrious Greeks, who embarked along with Jason in the ship Argo, on an expedition to Colchis with a design to obtain the golden fleece. Some writers imagine, and foremost among them is Sir Isaac Newton, that this expedition was really an embassy sent by the Greeks, during the intestine divisions of Egypt, in the reign of Amenophis, to persuade the nations upon the coasts of the Euxine and Mediterranean seas to take that opportunity of shaking off the yoke of Egypt, which Sesostris had laid upon them: and that fetching the golden fleece was only a pretence to cover their true design.

AR'GUMENT, in rhetoric and logic, an inference drawn from premises, the truth of which is indisputable, or at least highly probable. In reasoning, Mr. Locke observes that men ordinarily use four sorts of arguments. The first is to allege the opinions of men, whose parts and learning, eminency, power, or some other cause, has gained a name, and settled their reputation in the common esteem, with some kind of authority; this may be called *argumentum ad verecundiam*. Secondly, another way is to require the adversaries to admit what they allege as a proof, or to assign a better; this he calls *argumentum ad ignorantiam*. A third way is, to press a man with consequences, drawn from his own principles or concessions; this is known by the name of *argumentum ad hominem*. Fourthly, the using proofs drawn from any of the foundations of knowledge or probability; this he calls *argumentum ad judicium;* and observes, that it is the only one of all the four, that brings true instruction with it, and advances us in our way to knowledge.——ARGUMENT, in literature, denotes also the abridgment, or heads of a book, history, chapter, &c.——ARGUMENT, in astronomy, any quantity or equation on which depends another quantity relating to the motion of the planets; or it may be defined, an arc whereby another arc is to be sought, bearing a certain proportion to the first arc.—Ex.: *Argument of Inclination*, an arch of a planet's orbit intercepted between the ascending node, and the place of the planet from the sun, numbered according to the succession of the signs.

ARGUMENTA'TION, in logic, an ope-

ration of the intellect, by which any proposition is proved by the help of other propositions.

ARGYROPŒ'IA, in alchemy, the art of making silver out of inferior metals, by the aid of the philosopher's stone.

A'RIANS, the followers of Arius, a bishop of Alexandria, about A.D. 318, who denied the three persons in the Holy Trinity to be of the same essence, and affirmed Christ to be a creature; that he was inferior to the Father as to his deity; that he was neither co-eternal, nor co-equal with him; and that the Holy Ghost was not God, but a creature of the Son.

A'RIES, in astronomy, a constellation of fixed stars, drawn on the globe in the figure of a *ram*. It is the first of the twelve signs of the zodiac, from which a twelfth part of the ecliptic takes its denomination, and consists of sixty-six stars. It is usually called the vernal sign.——ARIES was also the original name for the battering ram of the ancients.

ARIO'SO, in musical composition, the Italian word for the time of a common air.

ARIS'TA, in botany, a long needle-like beard, which stands out from the husk of a grain of corn, grass, &c.

ARISTOC'RACY, an hereditary government, composed of the nobles, or superior citizens of a country: such was the government of Venice. Aristocracy is also often used for the nobility of a country, under a monarchy, or any form of government.

ARISTOLO'CHIA, in botany, *Birthwort:* a genus of the hexandria order, and gynandria class of plants. The species are all either shrubs or perennials.

ARISTOTE'LIAN, something relating to Aristotle: thus we read of the Aristotelian philosophy, school, &c. The Aristotelians were also designated Peripatetics, and their philosophy long prevailed in the schools, till it gave place to the Newtonian.

ARITH'METIC, the art or science of numbering, or computing by certain rules, of which the four first and simplest are addition, subtraction, multiplication, and division. Vulgar Arithmetic is the computation of numbers in the ordinary concerns of life. Integral Arithmetic treats of whole numbers; Fractional Arithmetic, of fractional numbers; Decimal Arithmetic, of decimal numbers. The method of notation that we now use is said to be taken from the Arabians, and the characters by which all the operations of common arithmetic are performed are these, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0. The first nine are called significant figures, which when placed singly denote the simple numbers subjoined to the characters; but when several significant numbers are placed together, the first or right hand figure only is to be taken for its simple value: the second signifies so many tens, the third so many hundreds, and so on. Although this notation consists of only nine digits, with the cipher 0, yet, by giving a local power to these figures, namely, that of units, tens, hundreds, thousands, &c. they may be made to express numbers to an indefinite extent. The Greeks made use of the letters of their alphabet to represent their numbers. The Romans followed the same method, and besides characters for each rank of classes, they introduced others for five, fifty, five hundred, &c.; as, I, for One; V, Five; X, Ten; L, Fifty; C, One Hundred; D, Five Hundred; and M, a Thousand. Now it is evident that with these seven letters any number may be represented, by repetition and combination, thus XXX stand for three tens or thirty: CCX for two hundred and ten, and so on. The general rule with regard to the addition and subtraction of these letters is this: when a numeral letter is placed *after*, or on the right hand of one of greater value, their values are to be added, thus XVI stand for sixteen, and MDCCCXXXIX for the date of the year 1839. But when a numeral letter is placed *before*, or on the left hand of one of greater value, the value of the less is taken from that of the greater, thus IV stand for five less one, or four; IX or ten less one, or nine; XC one hundred less ten, or ninety, &c.

ARK, the floating vessel in which Noah and his family were saved from the flood. It was 500 feet long, 90 broad, and 50 high.

ARK OF THE COVENANT, the chest in which the stone tables of the ten commandments, written by the divine hand, were laid up. The lid of the ark was called the mercy-seat, before which the high-priest appeared once every year on the great day of expiation; and the Jews, wherever they worshipped, turned their faces towards the place where the ark stood.

ARMA'DA, a Spanish term, signifying a fleet of men-of-war. The armada to which the Spaniards, in confidence of success, gave the name of *invincible*, consisting of 130 large ships, furnished with an immense quantity of military stores and a large army, was intended to destroy the liberties of this country during the reign of the illustrious Elizabeth, but it was scattered by the elements and almost annihilated by the English fleet, on the 30th July, 1588. On which occasion a medal was struck with the motto, "Afflavit Deus, et dissipantur," in grateful memory of the interposition of Heaven in our favour.

ARMADIL'LA, called also GUARDA COSTAS, a squadron of men-of-war formerly maintained on the coasts of Spanish America, to prevent foreigners from trading with the colonists and natives.

ARMADIL'LO, in natural history, a quadruped, a native of Brazil and the West Indies, with the snout of a pig, the tail of a lizard, and the feet of a hedgehog. He is armed with a coat of impenetrable scales, under which he retires like a tortoise.

ARMA'RIUM, in antiquity, a storehouse for all sorts of arms or utensils.

ARMATU'RA, in antiquity, the military exercise in use among the Romans, which consisted either in throwing the spear or javelin, shooting with the bow, &c.

ARME'NIANS, a sect or division amongst the eastern Christians; thus called from

THE WORD "ARISTARCHY" IS USED TO DENOTE A BODY OF GOOD MEN IN POWER; "OLIGARCHY," A CORRUPT ARISTOCRACY.

THE WORD "ARMATURE" IS SYNONYMOUS WITH ARMOUR, AND COMPREHENDS WHATEVER IS WORN FOR THE DEFENCE OF THE BODY.

Armenia, the country anciently inhabited by them; there were two kinds of Armenians, one which adhered to the catholic church, and another which rejected episcopacy. They are generally accused of being monophysites, only allowing of one nature in Jesus Christ.

ARME'NIAN STONE, an opaque sort of stone, of a greenish blue colour, like the lapis lazuli. It is used as a purgative.

ARME'NIAN BOLE, a native bole or earth brought from Armenia, commonly called bole armoniac. It is used as an absorbent and astringent.

AR'MIGER, an esquire, or armour-bearer. A title of dignity to such as bear arms; of which there are two kinds, *Armigers by courtesy*, as sons of noblemen, eldest sons of knights, &c., and *Armigers by creation*, such as the king's servants, &c.

ARMIL'LA-MEMBRO'SA, in anatomy, is that circular ligament which comprehends all the tendons of the whole hand as it were a circle.——ARMILLA, in antiquity, a bracelet or ornament for the wrist, presented as a badge of distinction to soldiers.

AR'MILLARY SPHERE, in astronomy, an artificial sphere composed of a number of circles put together in their natural order to assist the imagination in conceiving of the motions of the celestial bodies. This sphere revolves on its axis with a silvered horizon, which is divided into degrees, and moveable every way upon a brass supporter. The other parts are the equinoctial, zodiac, meridian, tropic and polar circles.——ARMILLARY TRIGONOMETER, an instrument, consisting of five semi-circles divided and graduated so as to solve many problems in astronomy.

ARMIN'IANS, followers of Arminius; a sect of Christians which arose in Holland, about the beginning of the 17th century, and separated themselves from the Calvinists. They consider the doctrine of the Trinity as unessential to salvation; and the worship of the Holy Spirit as unordained by any precept of the scriptures. Their great principle is, that all sects of Christians ought to be tolerated.

AR'MOUR, a name for all such habiliments as serve to defend the body from wounds, especially of darts, a sword, a lance, &c. A complete suit of armour anciently consisted of a casque or helm, a gorget, cuirass, gauntlets, tasses, brassets, cuishes, and covers for the legs, to which the spurs were fastened. This they called armour *cap-a-pie*; and was worn by cavaliers and men at arms. The infantry had only part of it, viz. a pot or head-piece, a cuirass and tasses; but all of them made light. Lastly, the horses themselves had their armour, wherewith to cover the head and neck. Of all this furniture of war, scarcely any thing is now retained except the cuirass.

ARMOUR-BEARER, the person who was formerly employed to carry the armour of another.

ARMS, in military phraseology, all kinds of weapons, whether used for offence or defence.——ARMS, in a legal sense, extend to any thing that a person wears for his own defence, or takes into his hand, and uses, in anger, to strike or throw at another.——ARMS denote also the natural weapons of beasts, as claws, teeth, beak, &c.

ARMS, COATS OF, family insignia or distinctions, which had their rise from the painting of the shields used in war before the invention of gunpowder.

AR'MY, in a general sense, is taken for the whole armed force raised for the defence of the country by land. In a limited sense, it denotes a large body of soldiers, consisting of horse and foot, completely armed, and provided with artillery, ammunition, provisions, &c. under a commander-in-chief, having lieutenant-generals, major-generals, brigadiers, and other officers under him. An army is generally divided into a certain number of corps, each consisting of brigades, regiments, battalions, and squadrons; when in the field, it is formed into lines; the first line is called the vanguard, the second the main body, the third the rear-guard, or body of reserve. The middle of each line is occupied by the foot; the cavalry forms the right and left wing of each line, and sometimes squadrons of horse are placed in the intervals between the battalions.——The *materiel* of an army, as the French term it, consists of the horses, stores, provisions, and every thing necessary for service. *Armies* are moreover distinguished according to their service, into *blockading army, army of observation, army of reserve*, &c.

AR'NABOS, an aromatic drug, sometimes employed as a substitute for cinnamon.

A'ROBE, in commerce, a Portuguese measure for sugar, equal to 25 bushels.

ARO'MA, the odoriferous principle peculiar to plants and flowers.

AROMAT'IC, an appellation given to such plants and other bodies as yield a brisk fragrant smell, and a warm spicy taste, as cloves, cardamom-seeds, cinnamon, nutmegs, &c. Their peculiar qualities reside in a volatile oil, usually called essential oil, and a grosser resinous substance, capable of being extracted by spirit of wine. *Aromatics*, considered as medicines, warm the stomach, and by degrees the whole habit, raise the pulse, and quicken the circulation: hence in cold languid cases, they increase strength, and promote the natural secretions.

A'ROPH, a term employed by the ancient alchemists for a distillation of saffron and other chemical flowers.

ARPEG'GIO, in music, is a term implying that the tones should be sounded distinctly, as they are heard on the harp.—ARPEGGIO ACCOMPANIMENT consists chiefly of the notes of the several chords taken in returning successions.

AR'PENT, a French measure of 100 perches.

AR'QUEBUS, a hand-gun, larger than a musket. He who used it was called an *Arquebusier*.

ARQUEBUSA'DE, a kind of medicated water, recommended in cases of gun shot

IN ENGLISH STATUTES, "ARMOUR" IS USED FOR THE WHOLE APPARATUS OF WAR, OFFENSIVE AND DEFENSIVE.

THE AROMA, OR ODOROUS MATTER OF FLOWERS, IS OF AN INFLAMMABLE NATURE, WHICH ARISES FROM ITS ESSENTIAL OIL.

NO PERSON CAN BE ARRESTED IN A FAIR, EXCEPT FOR DEBTS CONTRACTED THERE, OR PROMISED THERE TO BE PAID.

IN SCRIPTURE, THE "ARROWS OF GOD" ARE THE APPREHENSIONS OF HIS WRATH, OR THE REPRESENTATIONS OF HIS JUDGMENTS.

wounds; whence its name. It is also called *aqua vulneraria* and *aqua sclopetaria*.

ARRACHE' in heraldry, a representation of a plant torn up by the roots.

ARRAIGN'MENT, in law, the bringing a prisoner forth, reading the indictment to him, and putting the question of guilty or not guilty.

AR'RAS HANGINGS, in commerce, tapestry made at Arras, in France.

ARRAY', the drawing up of soldiers in order of battle.——In law, *to challenge an array*, is to make exceptions against all the persons arrayed or impanelled.

ARREST', the apprehending and restraining a person, in order to oblige him to be obedient to the law; which in all cases, except treason, felony, or breach of the peace, must be done by virtue of precept out of some court. Ambassadors, peers of the realm, and members of parliament, are privileged from an arrest for debt. ARREST OF JUDGMENT, is the assigning just reasons why judgment should not pass; as, want of notice of the trial; a material defect in the pleading; when the record differs from the deed pleaded; when persons are mis-named; where more is given by the verdict than is laid in the declaration, &c. This may be done either in criminal or civil cases.—— ARREST, in the veterinary art, a disease seated between the ham and the pastern.

ARRIE'RE BAN, the phrase for a general proclamation of the French kings, by which not only their immediate feudatories, but their vassals, were summoned to take the field of war.——An *arriere vassal* was the vassal of a vassal.

AR'RIS, in architecture, the intersection or line formed by the meeting of the exterior surfaces of two bodies, answering to what is called the edge.——ARRIS FILLET, a small piece of timber, of a triangular section, used in raising the slates against a wall that cuts obliquely across the roof.

ARRONDEE', in heraldry, a cross, consisting of sections of a circle, the whole of the curves being in the same direction.

AR'ROW, a light shaft, or rod, pointed at one end, and feathered at the other, intended as a weapon of offence. Arrow-makers were called *fletchers* (from *fleche*, the French word for *arrow*.) When this weapon is borne in coats of arms, it is said to be barbed and feathered.

AR'ROW-GRASS, a plant so called because its leaves resemble the head of an arrow.

AR'ROW-ROOT, the root of the *maranta arundinacea*, a plant which grows in the West Indies, and furnishes a kind of starch, more nutritive, and freer from peculiar taste or flavour, than the starch of either wheat or potatoes.

AR'ROW-STICK, a rod employed in surveying.

AR'SENIC, a ponderous mineral body, associated with a great many metallic ores. It is yellow, white, and red. Yellow arsenic is the native arsenic dug out of the mines, otherwise called arsenic ore. White arsenic is drawn from the yellow by sublimating; and is reduced to powder by the mixture of oxygen, or exposure to the air. This is sometimes used in medicine in small quantities, but is otherwise a deadly poison. Red arsenic is the yellow arsenic rubified by fire, when it is called realgal. The following recipe has been given, as likely to be effectual where arsenic has been received into the stomach. If a quantity is swallowed large enough to endanger life, let an emetic be instantly given, and then large quantities of hepar sulphuris dissolved in water be taken: this, a scruple at a time, given with emetics, milk, castor oil, &c. may prevent the dire effects that would otherwise follow the dose of poison.

ARSEN'ICAL, an epithet for whatever contains or belongs to arsenic, as *arsenical pyrites*, &c.——ARSENICAL MAGNET, a preparation of antimony with sulphur and white arsenic.——ARSENICAL SOLUTION, a solution of arsenic with sub-carbonate of potash in distilled water.

ARSE'NIATE, a sort of salts formed by the combination of arsenic acid with different bases, as the arseniate of ammonia, &c.

AR'SON, the act of wilfully setting houses on fire, which is felony at common law, and likewise by statute.

ART, a system of rules, serving to facilitate the performance of certain actions; in which sense it stands opposed to science, or a system of merely speculative principles.——*Terms of Art*, are such words as are used in regard to any particular art, profession, or science.

ART and PART, a phrase used in Scotland; when any one is charged with a crime, they say, he is *art and part* in committing the same, that is, he was concerned both in the contrivance and execution of it.

AR'TERY, a blood vessel, which proceeds from the heart, and gradually becomes less in diameter the farther it goes; but it gives out numberless ramifications in its course. Arteries carry the blood from the heart to every part of the body, for the preservation of life, for nutrition, generation of heat, and the secretion of the different fluids. The action of the arteries, called the pulse, corresponds with that of the heart.

ARTEMIS'IA, in antiquity, a festival celebrated in honour of Diana. In the Linnæan system of botany, a genus of plants, in which southernwood, wormwood, &c. are contained.

ARTE'SIAN WELLS, a subterranean fountain of pure water, which is obtained by boring vertically down through one or more of the geological strata of the earth, till the perforation reaches a porous gravel bed containing water, placed under such incumbent pressure as to cause it to ascend to the surface, or to a height convenient for the operation of a pump. It is said that they derive their name from the ancient French province of Artois, where for many centuries they have been used, although their adoption in this country is very recent. The operations employed for penetrating the soil are entirely similar to those practised by the miner, in boring to find

metallic veins; but the excavator of Artesian wells must resort to peculiar expedients to prevent the purer water, which comes from deep strata, mingling with the cruder waters of the alluvial beds near the surface of the ground, &c. In London and its vicinity there are now a great many of these wells, which have been perforated through the immensely thick bed of London clay, and even through some portions of the subjacent chalk. If we admit that the numerous springs which issue from the ground proceed from the infiltration of the waters progressively condensed in rain, dew, &c. the theory of these interior streamlets is sufficiently obvious; for as soon as the upper stratum is perforated, the waters may rise, in consequence of the hydrostatic pressure upon the lower strata, and even overflow the surface in a constant stream, provided the level from which they proceed be proportionally higher. In the progress of the boring, frequent veins of water are passed through; but as these are small streams, and perhaps impregnated with mineral substances, the operation is carried on until an aperture is made into a main spring, which will flow up to the surface of the earth. If this has its source in a neighbouring hill, the water will frequently rise up, and produce a continued fountain; but if the spring happens to be below the level of the surface of the ground where the boring is effected, it may be necessary to dig a well of considerable size down to that level, in order to form a reservoir into which the water may flow, and whence it must be raised by a pump.

ARTHRI'TIS, the GOUT, in medicine. [See the article GOUT.]

ARTHRITICA, in botany, a name used for the primrose.

ARTHRO'DIA, in natural history, a genus of imperfect crystals, found always in complex masses, and forming long, single pyramids, with very short and slender columns.——In anatomy, a species of articulation, wherein a flat head of one bone is received into a shallow socket of another.

ARTICHOKE, a plant very like the thistle, with scaly heads similar to the cone of the pine tree. At the bottom of each scale, as also at the bottom of each floret, is the well known fleshy edible substance. The *Jerusalem Artichoke* is a plant, the root of which resembles a potato, having the taste of the artichoke.

ARTICLE, in grammar, a particle in most languages, that serves to express the several cases and genders of nouns, when the languages have not different terminations to denote the different states and circumstances of nouns.——ARTICLE, in law, the clause or condition in a covenant.

ARTICULA'TION, in anatomy, the junction of two bones intended for motion. There are two kinds; the diarthrosis, which has a manifest motion, and synarthrosis, which has only an obscure motion.——Also, the distinct utterance of every letter, syllable, or word, so as to make one's-self intelligible.

ARTIFICER, one who works with the hands, and manufactures any kind of commodity in metal, wood, &c.; a mechanic.

ARTIFICIAL DAY, in astronomy, that space of time which intervenes between the rising and setting of the sun.

ARTIFICIAL LINES, in geometry, lines so contrived on a sector as to represent logarithmal lines and tangents.

ARTIL'LERY, a collective name denoting engines of war, but particularly cannon, mortars, and other large pieces, for the discharge of shot and shells. It is also employed to denote the science which teaches all things relating to the artillery, as the construction of all engines of war, the arrangement, movement, and management of cannon and all sorts of ordnance, used either in the field, or the camp, or at sieges, &c The same name is also given to the troops by whom these arms are served, the men being, in fact, subsidiary to the instruments.——*Park of artillery*, a place set apart in a camp for the artillery and large fire-arms.——*Train of artillery*, a set or number of pieces of ordnance mounted on carriages.——*Flying artillery*, a sort of artillery, so called from the celerity with which it can be moved. Seats are contrived for the men who work it, and a sufficient force of horses is applied to enable them to proceed at a gallop; each horse being rode by a separate driver.

ARTIMOURAN'TICO, in metallurgy, a recently discovered compound of tin, bismuth, sulphur, and copper, having greatly the appearance of gold.

AR'TIST, a proficient in the liberal arts, in distinction from ARTIZAN, or one who follows one of the mechanic arts.

ARTS, in the most general sense of the word, means any acquired skill. They are usually divided into *fine* and *useful;* comprising under the former, all those, the direct object of which is not absolute utility, as painting, sculpture, music, poetry, &c., in distinction to the arts called *useful*, or such as are essential to trade and commerce.

ARVA'LES FRA'TRES, in Roman antiquity, a college of twelve priests, instituted by Romulus, who himself made one of the body: they assisted in the sacrifices of the Ambervalia, offered annually to Ceres and Bacchus, for the prosperity of the principal fruits of the earth.

ARUNDE'LIAN MARBLES, called also the Parian Chronicle, are ancient stones, on which is inscribed a chronicle of the city of Athens, supposed to have been engraven in capital letters, in the island of Paros, 264 years before Christ. They take their name from the earl of Arundel, who procured them from the East, or from his grandson, who presented them to the University of Oxford.

ARUS'PICES, or HARUS'PICES, an order of priesthood among the Romans, who pretended to foretel future events by inspecting the entrails of victims killed in sacrifice. They were introduced by Romulus, and abolished by Constantine, A.D. 337.

AR'VIL, or AR'VAL, in archæology, fu-

neral rites.——ARVIL BREAD, bread given to the poor at a funeral.

ARYTH'MUS, in music, the modulation of time.

AS, a weight used by the ancients, consisting of 12 ounces: it was also used as a coin, and as an integer divided into 12 parts.

ASAFŒT'IDA, a resinous gum of a very fetid smell, obtained from the *ferula asafœtida*, a perennial plant, which is a native of Persia. It comes into this country in small grains of different colours, hard and brittle; and is considered an excellent remedy in hysterical disorders.

ASAPHA'TUM, in medicine, a sort of serpigo, supposed to be generated in the pores like worms.

A'SAPHEIS, defective utterance.

ASARO'TA, in antiquity, a pavement or floor laid in dining rooms, and composed of very small tiles inlaid in different colours.

ASA'SI, a tree growing on the coast of Guinea, the infusion of whose leaves cures the tooth-ache.

ASBES'TOS, or ASBES'TUS, an inflammable mineral substance, of which *amianthus* is one of its principal species. This consists of elastic fibres, somewhat unctuous to the touch, and slightly translucent. The ancients manufactured cloth from the fibres of the asbestos for the purpose, as is said, of wrapping up the bodies of the dead when exposed on the funeral pile; it being incombustible in its nature.

ASCAR'IDES, worms that infest the *intestinum rectum*, and cause a violent itching; also a kind of worms which infest the intestines of all animals.

ASCEND'ANT, in law, such relations as are nearer the root of the family; as the father, grandfather, great uncle, &c. Marriage is always forbidden between the ascendants and descendants in a right line. ——ASCENDANT, in astrology, that degree of the ecliptic that rises at a person's nativity; or the planet supposed to preside over the fate of an individual at his birth. ——ASCENDANT, in architecture, an ornament in masonry or joiner's work, which borders the three sides of doors, windows, and chimneys.

ASCEND'ING, in astronomy, an epithet applied to any star, degree, or point in the heavens, which is rising above the horizon. ——ASCENDING LATITUDE, the latitude of a planet when going toward the north pole.——ASCENDING NODE, that point of a planet's orbit, wherein it passes the ecliptic to proceed northward.——ASCENDING SIGNS, those which are upon the ascent, or rising, from the nadir to the zenith.

ASCEN'SION, in astronomy, that degree of the equator reckoned from the first of Aries eastward, which rises with the sun or a star. This is either right or oblique, according as it rises in a right or an oblique sphere.——ASCENSIONAL DIFFERENCE, the difference between the right and the oblique ascension in any part of the heavens.

ASCEN'SION DAY, a festival observed in the Christian church, ten days before Whitsuntide, in memory of our Saviour ascending into Heaven. It is otherwise called Holy Thursday.

ASCEN'SUS MOR'BI, in medicine, the ascent or increase of a disease.

ASCENT', in a general sense, the motion of a body upwards. The ascent of light bodies is owing to the preponderancy of heavier ones, whereby they are impelled upwards.——ASCENT OF FLUIDS, the rising of fluids in a glass tube or any vessel above the surface of their own level.——ASCENT, in logic, a sort of reasoning by which one ascends from particulars to universals.

ASCETICS, in ecclesiastical history, such Christians in the primitive church as inured themselves to great degrees of abstinence and fasting, in order to subdue their passions. In short, every kind of uncommon piety laid claim to the name *ascetic*.

AS'CII, in geography, inhabitants of the globe having no shadow, such as those in the torrid zone, who twice a year have their sun at noon in the zenith.——ASCIA, in surgery, a bandage in the form of an axe.

ASCID'IA, in entomology, a genus of animals of the *mollusca* species, found principally in the sea, adhering to rocks, shells, and other submarine substances.

ASCI'TES, in medicine, dropsy in the region of the abdomen.

ASCLEPI'A, a Grecian festival, held in honour of Æsculapius. It was also called the sacred contest, because poets and musicians contended for victory there.

ASCLEPIADÆ'AN VERSE, a kind of poetic measure, so called from Æsclepias, the inventor of it.

ASCLE'PIAS, in botany, a genus of plants, of which the species are mostly perennials and shrubs. Class 5, *Pentandria*; Order 2, *Digynia*.

ASCO'LIA, in Grecian antiquity, a festival celebrated by the Athenian husbandmen, in honour of Bacchus, to whom they sacrificed a he-goat, because that animal destroys the vines.

AS'CYRUM, in botany, a genus of plants with a rosaceous flower, and an oblong capsular fruit, formed of two valves, and containing a number of small, roundish seeds. It belongs to the *polyadelphia polyandria* class of Linnæus.

ASE, in medicine, a term formerly used to denote a loathing of food arising from a diseased stomach.

ASH, a well-known English tree, whose wood is much used by wheelwrights, turners, &c. There are several kinds, the *common*, *flowering*, *mountain* ash, &c.

ASH'ES, the remains of any vegetable, animal, or mineral substance that has been burned; and when of metals, called dross, calces, or oxydes.

ASCRIPTI'TII, in ancient history, supernumerary soldiers, who served to supply the losses in the legions. Also, in later times, foreigners or aliens newly admitted to the freedom of a city.

ASH'LAR, free-stone as it comes from the quarry.

ASHO'RE, a term for on the shore or land, as opposed to *aboard;* but a ship is said to be *ashore* when she has run aground.

ASH-WED'NESDAY, the first day in Lent, so called from the ancient custom of fasting in sackcloth and ashes.

A'SIARCH, in Grecian antiquity, a governor of the provinces, who used to preside over the public games.

ASI'DE, a term in plays for what is to be said on the stage without being heard by the other performers.

ASI'LUS, in entomology, a genus of insects in the Linnæan system, of the order *diptera.*

ASINA'RIA, a festival anciently held in Sicily, in commemoration of the victory obtained over the Athenians, when Demosthenes and Nicias were taken prisoners; and was so called from the river Asinarius, near which it was fought.

ASP, in zoology, a very small kind of serpent, (the *Coluber aspis* of Linnæus), peculiar to Lybia and Egypt. Its bite is so fatal, and its effects so quick, that death ensues without the possibility of applying a remedy.

ASPAR'AGUS, a valuable esculent plant, which requires three years at least to bring it to maturity from the time of sowing the seed, and will not yield vigorously without a continual supply of manure.

AS'PEN-TREE, a kind of white poplar, the leaves of which are perpetually in a tremulous motion.

ASPERIFO'LIATE, or ASPERIFO'LIOUS, among botanists, such plants as are rough leaved, having their leaves placed alternately on their stalks, and a monopetalous flower divided into five parts.

ASPERIFO'LIÆ, the 41st Linnæan natural order of plants, with rough leaves.

ASPHAL'TUM, a bituminous or inflammable substance, found in abundance in different countries, especially near the Dead Sea, and in Albania; but nowhere in such quantities as in the island of Trinidad, where there is a large plain of it, called the Tar Lake, which is three miles in circumference and of an unknown depth. It is also found in France, Switzerland, and some other parts of Europe. It appears in detached masses of no regular structure, breaking easily in any direction, very light, fusible, and after burning some time with a greenish white flame, leaving a residuum of white ashes. The ancients employed asphaltum in the construction of their buildings; and at the present day it is used partially in lieu of stone, in paving the streets of London. In short, several "asphalt companies" have been formed with a view of prosecuting it as a commercial speculation; and, judging by the specimens we have seen, we are induced to think it will eventually be very generally introduced.

AS'PER, a Turkish coin, equal to three farthings of our money.

AS'PHODEL, in botany, a genus of the *hexandria monogynia* class of plants, the flower of which is liliaceous. We are told that the ancients used to put asphodel into the tombs, that there might be food in the regions below for the departed spirits.

ASPHYX'IA, in medicine, the state of a living body in which no pulsation can be perceived.

AS'PIRATE, in grammar, a character in the Greek (marked thus, ') to denote that the vowel must be sounded with a breathing. In English, the letter *h* is called aspirate, when it is sounded, in distinction to *h* mute.

ASS, *(equus asinus)* a patient and useful quadruped, remarkable for its hardihood and length of life. Notwithstanding the dull and dogged disposition of this animal in our climate, it is a descendant of the wild ass, inhabiting the mountainous deserts of Tartary, &c.; celebrated in sacred and profane history, for the fiery activity of its disposition, and the fleetness of its course; but in consequence of ill usage and bad fare, the ass has long since become proverbial for stolid indifference to suffering, as well as for obstinancy and stupidity. Its characteristics are a long head, long ears, a round body covered with a short and coarse fur, of a pale dun colour, with a streak of black running down its back and across the shoulders, and a tail not hairy all the way, as in a horse, but only at the end. The best breed of asses is that originally derived from the hot and dry regions of Asia; but the best to be met with in Europe are the Spanish.

ASSAS'SIN, one who kills another, not in open combat, but privately, or suddenly. The name is generally restrained to murderers of princes or other political characters; or, to speak perhaps more explicitly, to where the murder is committed from some sentiment of hatred, but in a private and dastardly manner.

AS'SAI, a musical term, which indicates that the time must be accelerated or retarded; as *allegro,* quick; *allegro assai,* still quicker; *adagio assai,* still slower.

ASSANE'GI, in mineralogy, the powder that falls off from the walls of salt in the salt mines.

AS'SANUS, an ancient weight amounting to two drams.

ASSAULT', in law, an attempt or offer, with force and violence, to do a bodily injury to another; as by striking at him either with or without a weapon.——ASSAULT, in the military art, a furious effort made to carry a fortified post, camp, or fortress, wherein the assailants do not screen themselves by any works.

ASSAY'ING, in metallurgy, is used to express those chemical operations which are made in small to ascertain the quantity of metal contained in ores, or to discover the value or purity of any mass of gold, silver, or any other metal. This mode of examination differs from analysis, in being principally concerned about only one of the ingredients in the ore or alloy, whereas the object of the latter is to ascertain the quantity and proportion of every substance in the mass to which it is applied.

ASSAY-MASTER, an officer, under cer-

THE DEAD SEA IS FREQUENTLY TERMED THE ASPHALTIC LAKE, FROM THE LIQUID ASPHALTUM WHICH FLOATS ON ITS SURFACE.

A COMPOSITION OF ASPHALT, LAMP-BLACK, AND OIL IS USED FOR DRAWING BLACK FIGURES ON DIAL-PLATES.

tain corporations, entrusted with the care of making true touch, or assay, of the gold and silver brought to him; and giving a just report of the goodness or badness thereof.

ASSENT' (THE ROYAL), is the approbation given by the king (or reigning monarch) in parliament to a bill which has passed both houses; after which it becomes a law.

ASSETS', in law or trade, signifies goods or property enough to answer all demands made upon them.——REAL ASSETS are lands in fee simple whereof a man dies possessed.——PERSONAL ASSETS, any personal estate.

AS'SIDENT SIGNS, in medicine, symptoms which occasionally attend any disease incident to the human frame.

ASSI'GNABLE MAGNITUDE, in mathematics, any finite magnitude that can be expressed or specified.

ASSIGNA'T, the name of the national paper currency in France during the Revolution. Four hundred millions of this paper money were first struck off by the constituent assembly, with the approbation of the king, April 19, 1790, to be redeemed with the proceeds of the sale of the confiscated goods of the church. They at length increased, by degrees, to forty thousand millions, and after a while they became of no value whatever.

ASSIGNEE', in law, a person appointed by another to do an act, transact some business, or enjoy a particular privilege. The person to whom is committed the management of a bankrupt's estate.

ASSI'GNMENT, in law, the act of assigning or transferring the interest or property a man has in a thing; or of appointing and setting over a right to another.

ASSIMILA'TION, that process in the animal economy by which the different ingredients of the blood are made parts of the various organs of the body.

ASSI'ZES, a meeting of the king's judges, the sheriff, and juries, for the purpose of making gaol-deliveries, and trying causes between individuals; generally held twice in the year. The assizes are *general* when the justices go their circuits, with commission to take all assizes, that is, to hear all causes; and they are *special* when special commissions are granted to hear particular causes.

ASSOCIA'TION OF IDE'AS. By this phrase is understood that connexion between certain ideas which causes them to succeed each other involuntarily in the mind. To the wrong association of ideas made in our minds by custom, Mr. Locke attributes most of the sympathies and antipathies observable in men, which work as strongly, and produce as regular effects, as if they were natural, though they at first had no other origin than the accidental connexion of two ideas, which either by the strength of the first impression, or future indulgence, are so united, that they ever after keep company together in that man's mind as if they were but one idea.

ASSO'DES, in medicine, a fever with excessive inward heat, though not so great externally.

ASSOI'LE, in our ancient law-books, to absolve, free, or deliver one from excommunication.

AS'SONANCE, in rhetoric or poetry, is where the words of a phrase or verse have nearly the same sound, or termination, but make no proper rhyme.

ASSUMP'SIT, in law, a voluntary promise by which a man binds himself to pay any thing to another, or to do any work.

ASSUMP'TION, a festival in the Romish church, in honour of the miraculous ascent of the Virgin Mary into heaven.——ASSUMPTION, in logic, is the minor or second proposition in a categorical syllogism. It is also used for a consequence drawn from the propositions whereof an argument is composed.

ASSUMP'TIVE ARMS, in heraldry, are such arms as a person has a right to assume to himself by virtue of some action, provided his right be confirmed by the approbation of his sovereign and the heralds.

ASSU'RANCE, or INSU'RANCE, an engagement by which a person is indemnified from the loss he would sustain by the happening of a particular event; as by the capture or wreck of a ship at sea, the destruction of property by fire, or by the death of the party.——ASSURANCE, in theology, is the firm persuasion of possessing a personal or actual interest in the divine favour.

AS'TER (Starwort), in botany, a genus of the *syngenesia-polygamia* class of plants, with a radiated flower, the disk of which is composed of floscules, and its border of semifloscules; the receptacle is plain and naked, and the seeds are of an oblong figure, oval at top, and winged with down.

ASTE'RIAS, in ichthyology, the Star-fish or Sea-star, a genus of animals, class *vermes*, order *mollusca*. They feed on oysters, to whose beds they are very destructive. The species are distinguished into the *lunate*, *stellate*, &c.

AS'TERISK, a little mark in the form of a star (*) used in printing as a mark of reference.

ASTERIS'MUS, in astronomy, an asterism or constellation of fixed stars.

ASTERN', a maritime term for *behind* a ship.

ASTERO'IDES, or AS'TEROIDS, the four small planets, Ceres, Juno, Pallas, and Vesta.

AS'THMA, a disease of the lungs, causing painful, difficult, and laborious breathing, with a hissing cough.

AS'TRAGAL, in architecture, a little round moulding, in form of a ring, serving as an ornament at the tops and bottoms of columns.——ASTRAGAL, in gunnery, the corner ring of a piece of ordnance.

ASTRA'GALUS, in anatomy, the ankle-bone.——ASTRAGALUS, in botany, Liquorice-Vetch, the seed of which resembles in shape the ankle-bone. It is also the name of a genus of plants, of the *diadelphia-decandria* class.

ASTRIC'TA, in medicine, an epithet applied to the belly, in opposition to *soluta*, or relaxed.

ASTRIC'TION, the operation of astringent medicines.

ASTRIN'GENTS, medicines of the corroborative class, which, acting as a stimulus, crisp and corrugate the fibres into a more compact tone; corroborate the solids, which are weakened, and consolidate such as are corroded and wounded. Such are the mineral acids and solutions of iron, zinc, &c. Peruvian bark is also highly astringent.

ASTROLABE, in geometry, an instrument for the accurate measurement of angles. It generally consists of a horizontal circular plate of metal, having the degrees, minutes, and seconds marked on its outer edge. The astrolabe was formerly used by navigators to discover the situation of a vessel at sea without the aid of the compass; but it is now superseded by Hadley's quadrant.

ASTROITES, or STAR STONE, a stone so called on account of its resemblance to a star. It has often been questioned among naturalists, whether they are parts of a petrified marine animal, or, as is more probable, a species of corals buried in the earth. The corals forming these stars are sometimes round, at other times angular; and their columns are sometimes separated, and sometimes the striæ run into each other.

ASTROL'OGY, is an art which may truly be said to be among the oldest superstitions in the world, and which consisted in judging or predicting human events from the situation and different aspects of the heavenly bodies. We read of it in the Mosaic history; and we know that those who professed the astrological art gave so much trouble at Rome, that they were at length banished by Tiberius. During the middle ages astrology and astronomy were cultivated in connexion by the Arabs, and their works on the subject are still extant. Nay, even so late as the 17th century astrology had its defenders among the learned men of Europe; but the Copernican system shook the foundations of the ancient science; and there are none but artful plunderers and ignorant dupes who, at the present day, give it the slightest countenance.

ASTRON'OMY is that science which treats of the heavenly bodies, explaining the motions, times, and causes of the motions, distances, magnitudes, gravities, light, &c. of the sun, moon, and stars; the nature and causes of the eclipses of the sun and moon, the conjunction and opposition of the planets, and any other of their mutual aspects, with the time when any of them did or will happen. As the heavens may be considered either as they appear to the naked eye, or as they are discovered by the understanding, astronomy may be divided into *spherical* and *theoretical*. Spherical astronomy is the consideration of the universe as it offers itself to our sight; under which head come all the appearances of the heavens, such as we perceive them, without any inquiry into the reason, the theory, or the truth of these appearances. Theoretical astronomy is the consideration of the true structure of the universe, accounting for the various phenomena of the heavenly bodies. This sublime science is founded in observation, but it receives its last perfection from calculation. Outrunning the cautious advances of observation, it descends from causes to phenomena, and on geometrical principles explains all the motions, magnitudes, and periods of revolution, of the heavenly bodies. This part has been called *descriptive astronomy;* and that which explains the causes of their motions, and demonstrates the laws by which those causes operate, *physical astronomy*. It is not within the scope of this work, however, to enter into the details of this science; but we shall briefly notice the most striking portions of its history. The generality of writers agree in assigning the origin of astronomy to the Chaldeans soon after the deluge, when, for the purpose of making their astrological predictions, to which they were much addicted, as also for that of advancing the science of astronomy, they devoted themselves to the study of the heavenly bodies. They discovered their motions and peculiar characters; and, from their supposed influences on human affairs, pretended to predict what was to come. The planets they called their interpreters, ascribing to Saturn the highest rank; the next in eminence was Sol, the sun; then Mars, Venus, Mercury, and Jupiter. By the motions and aspects of all these they foretold storms of wind and of rain, or excessive droughts, as also the appearance of comets, eclipses of the sun and moon, and other phenomena. The Egyptians also cultivated the science of astronomy about the same time, and there are some who ascribe to them the honour of being its real authors. The most ancient astronomical observations known to us are Chinese. (One, mentioned by Montucla, viz. a conjunction of Saturn, Jupiter, Mars, Mercury, and the Moon, occurs almost 2500 years before the Christian era!) That the Indian Brahmins also made considerable advances in the science of astronomy, among the earliest people of antiquity, appears no less certain. But in the obscurity of ancient history it is no easy task to determine to what nation the merit is actually due. Descending, however, to classic times, we find, that astronomy made great progress in Greece, and that Thales calculated a solar eclipse about 600 years B.C. Pythagoras also seems to have been possessed of astronomical knowledge. After him, the Athenian Meton (B.C. 433) introduced the famous lunar cycle of 19 years, at the end of which time the new moon appears on the same day of the year as at the beginning of it, since 19 solar years constitute very nearly 235 lunations, a discovery which was then regarded as so important, that the calculation was engraved in letters of gold, whence the number which marks the year of the cycle is still called *golden*. Eratosthenes, a Cyrenian, who was born 271 B.C. measured the circumference of the

earth; and, being invited to the court of Ptolemy Evergetes at Alexandria, he was made keeper of the royal library, and set up there the armillary spheres which Hipparchus and Ptolemy afterwards used so effectually. He also determined the distance between the tropics to be 11-83 of the whole meridian circle, which makes the obliquity of the ecliptic in his time to be 23 degrees, 51 minutes and one-third. Archimedes is said to have constructed a planetarium to represent the phenomena and motions of the heavenly bodies; and many others added to the stock of astronomical knowledge; but none so much as Hipparchus, who flourished about 140 years B.C. and surpassed all that had gone before him in the extent of his researches. He showed that the orbits of the planets were eccentric, and that the moon moved slower in her apogee than in her perigee. He constructed tables of the motions of the sun and moon; collected accounts of eclipses that had been computed by the Chaldeans and Egyptians; and calculated such as would happen for six hundred years to come; besides correcting the errors of Eratosthenes in his measurement of the earth's circumference, and computing the sun's distance more accurately. He is, however, most distinguished by his catalogue of the fixed stars to the number of a thousand and twenty-two, with their latitudes and longitudes, and apparent magnitudes. These and most other of his observations are preserved by his illustrious successor Ptolemy. From the time of Hipparchus, a chasm exists in the history of astronomy, till the commencement of the 2d century after Christ, when Ptolemy compiled a complete system of astronomy, in 13 books, which is known under the name of *Almagest*, given it by the Arabians, who translated it into their language in 827, and which, as the Ptolemæan system, notwithstanding its many errors, has maintained its value down to the latest times. The Arabians continued for many ages to direct their attention to astronomical science; and though they confounded it with the dreams of astrologers, they, nevertheless, deserve the regard of all who came after them, by their valuable observations. Among the Christian nations, at this period, a profound ignorance generally prevailed; but in the 13th century, astronomy, as well as other arts and sciences, began to revive in Europe, particularly under the auspices of the emperor Frederic II.; who, besides restoring some decayed universities, founded a new one, and in 1230 caused the works of Aristotle, and the Almagest of Ptolemy, to be translated into Latin. King Alphonso of Castile, about the same time, invited to his court several astronomers, and commissioned them to prepare a set of new astronomical tables, which, under the name of *Alphonsine Tables*, have acquired much celebrity; but, in the 17th century, differed a whole degree from the true situation of the celestial bodies. We now approach the era of reviving science. Many astronomers of inferior note paved the way, by various insulated observations, for the great restorer of astronomy, Copernicus, who, at the beginning of the 16th century, gave the science an entirely different aspect, exploded the Ptolemæan hypothesis, and, in its stead, substituted the Copernican system of the world, which, with a few modifications, is still prevalent, and universally acknowledged to be correct. He it was that gave the sun its place in the centre of the planetary system, and who first conceived the bold idea that the earth is a planet, like Mercury, Venus, and the rest, and moves, in common with them, in a circle round the sun. His system did not, however, immediately meet with a general reception; and among other opponents was Tycho Brahe, a Dane; who asserted that the earth is immovable, in the centre of the universe, and that the whole heavens turned round it in 24 hours, an opinion which he supported, principally, by the literal sense of various passages in the Bible, where a total absence of motion is ascribed to the earth. His pupil and assistant Kepler, however, found that all the planets revolved in elliptical orbits, in one of the foci of which the sun was placed; and he moreover demonstrated that, in each elliptical revolution of the planets round the sun, an imaginary straight line, drawn from the latter to the former, always describes equal areas; and lastly, that, in the revolutions of the planets and satellites, the squares of the times of revolution are as the cubes of the mean distances from the larger body. These great discoveries paved the way for views still more comprehensive. Kepler had been indulged with a faint glimpse of the mutual tendency of all bodies to one another; and Dr. Hook went so far as to show that the motions of the planets were produced by the attractive agency of the sun, combined with the force which had originally projected them: but it was reserved for Newton to establish the law of universal gravitation in its entire generality, and to apply it with demonstrative evidence to all the movements within the solar system. His doctrine was, that all material bodies attract each other with a force directly proportional to the number of their particles, and inversely proportional to the squares of their distances. Descartes had sought the cause of the motion of the planets around the sun, and of the satellites around the planets, in the rotatory motion of a subtile matter. But Newton and Kepler have rescued the laws of the material universe from the thraldom of a false philosophy, and left to later times merely the developement of the truths which they established. By the application of their principles, as well as by new discoveries, several succeeding astronomers have gained a high reputation; namely, Halley, by his theory of comets; Bouguer and Maupertuis, by their exertions to determine the form of the earth; Mayer, by his lunar tables; Bradley, by the discovery of the aberration of light; also Euler, d'Alember, Lalande, Lagrange, Laplace, Sir W. Herschel, Olbers, Piazzi, Encke, &c.; besides many who are now liv-

ing, among whom Sir John Herschel and Sir William South deserve especial mention. In conclusion, it may be observed, that this science unites the strictness of mathematical reasoning with an exalted feeling for the sublime and beautiful, and fills the mind both with confidence in itself, from its ability to calculate with certainty the career of distant worlds, and with becoming humility in reflecting how small a part of the universe is our earth, and how brief its known duration, compared with the immense periods which enter into the calculations of astronomy.

ASTROSCOPE, an astronomical instrument, composed of two cones, on whose surface the constellations are delineated, by means of which the situation of the stars may easily be known.

ASTROSCO'PIA, in astronomy, the art of examining the stars by telescopes.

AS'TRUM, in astronomy, a constellation or assemblage of stars.——In alchemy, Astrum denotes the power imparted by chemical mixture.

ASY'LUM, in antiquity, a place of refuge for offenders, where they were screened from the hands of justice. The asyla of altars and temples were very ancient. The Jews had their asyla; the most remarkable of which were, the temple, the altar of burnt offerings, and the six cities of refuge. A similar custom prevailed both among the Greeks and Romans, where temples, altars, and statues, were places of refuge for criminals of every description. They had an idea, that a criminal who fled to the temple or altar, submitted his crime to the punishment of the gods, and that it would be impiety in man to take vengeance out of their hands. In former times the like immunities were granted by the pope to churches, convents, &c., and so well did the ecclesiastics improve their privileges, that convents in a little time became a kind of fortresses, where the most notorious offenders were in safety; nor could they be removed without a legal assurance of life, and an entire remission of the crime.

A'SYMPTOTE, in mathematics, a line which approaches nearer to another continually, and never meets it. It is properly applied to straight lines approaching a curve.

ASYN'DETON, in rhetoric or composition, the omission of conjunctions, or other connecting particles of speech, in order to render the sentence more lively and impressive.

AT'ABAL, a kind of tabor used among the Moors.

ATARAX'IA, or AT'ARAXY, a term used to denote that calmness of mind which secures us from all emotions arising from vanity or self-conceit. In this consisted the *summum bonum*, or sovereign good, of the Stoics.

AT'AXY, in a general sense, the want of order: with physicians it signifies the irregularity of crises and paroxysms of fevers.

ATCHIE'VEMENT, or ACHIE'VEMENT, in heraldry, means the arms of any family, with all the ornaments appendant thereto, painted on canvas, and fixed to the dwelling house of a person deceased, to denote his death.——Hatchment is the usual, though not the correct word.

A-TEM'PO, in music, Italian for 'in time,' employed when the regular measure has been interrupted.

ATHANA'SIA, in ancient medicine, an epithet given to a kind of antidote, supposed to have the power of prolonging life, even to immortality.

ATHANA'SIAN CREED, a formula of faith ascribed to St. Athanasius, which has been adopted into the liturgy of the Church of England.

A'THEIST, one who denies the existence of God or Providence. Some distinguish speculative atheists, or those who are so from principle and theory, from practical athiests, whose wicked lives incline them to believe, or rather to wish, that there were no God. Perhaps it is not to be wondered at, that among the smatterers in that philosophy which describes matter as acting upon matter by necessary laws, and thus producing necessary effects, some should be tempted to reject the existence of a primitive and preserving cause: especially, as in the pursuit of that philosophy the mind is accustomed to find every thing explained upon mechanical and comprehensible principles, while a distinct conception of a God exceeds the intellectual capacity of man. Lord Bacon observes, that though a smattering of philosophy may lead a man into atheism, a deep draught will certainly bring him back again to the belief of a God and Providence. We may have analyzed the component parts of matter, and reduced those parts into atoms; but, after all, what have we found that will supply the place of a Creator? It were more rational to believe that the majestic oak produces, of its own power and intelligence, its foliage and its fruit, than that atoms, of their power and intelligence, produced the majestic oak. Matter, then, must have had a Creator; and it is of little consequence to the fact, whether it acts upon instinctive endowments, or is senseless, and obeys controlling laws: in either case, a superior power and intelligence are indispensable. This power and intelligence must have existed from all eternity; since, if it ever began to be, it must have had a cause capable of producing it; and thus, to whatever distance we push the perspective, a deity closes up the scene: it must exist eternally, unless that which produced all matter, can itself be annihilated, and the source of life expire.

ATH'ELING, the title given to the king's eldest son among the Saxons, as the Prince of Wales is in our time.

ATHENÆ'UM, in antiquity, a public school wherein the professors of the liberal arts held their assemblies, the rhetoricians declaimed, and the poets rehearsed their performances. These places, of which there were a great number at Athens, were built in the manner of amphitheatres, encompassed with seats called *cunei*. The three

most celebrated Athenæa were those at Athens, at Rome, and at Lyons, the second of which was built by the emperor Adrian.

ATHENIP'PUM, in medicine, an affusion for the eyes.

A'THER, the prickly part or beard of barley.

ATHE'RA, in medicine, a kind of pap for children; also a kind of liniment.

ATHER'OMA, in surgery, a soft uninflamed tumour, generally contained within a cyst or bag, and often found under the arm-pits, the finger-joints, &c.

ATHLE'TÆ, in antiquity, men of remarkable strength and agility, disciplined to perform in the public games. This was a general term, under which were comprehended wrestlers, boxers, runners, leapers, throwers of the disk, and those who practised in other exercises exhibited in the Olympic, Pythian, and other solemn sports, wherein there were prizes allotted for the conquerors.

ATHLOTHE'TÆ, in antiquity, the judges who presided at the athletic games.

ATHWART', a sea term, signifying across the line of a ship's course.

ATHYM'IA, in medicine, dejection of spirits attendant upon some diseases.

AT'IBAR, in commerce, gold dust on the coast of Africa.

ATLAN'TES, in architecture, images of men, as pillars, supporting the buildings like the Caryatides.

ATLAN'TIDES, in astronomy, another name for the Pleiades.

AT'LAS, in geography, a collection of maps; more properly, a book containing maps of the whole world; so called from Atlas, who was fabled to have borne the world on his shoulders. It is also the name of a chain of high mountains in Africa, extending from the coast of the Atlantic to the border of Egypt.——ATLAS, a rich kind of satin, manufactured in the East-Indies, plain, striped, or flowered, and inter-worked with gold. They are manufactured with an excellence beyond the reach of European art, and were formerly in great repute, though but little used now.

AT'MOSPHERE, is that invisible elastic fluid, or vast collection of air, which surrounds the earth to an unknown height, and encloses it on all sides; a fluid essential to the existence of all animal and vegetable life, and even to the constitution of all kinds of matter whatever. This aerial fluid, or atmosphere, is not only admirably fitted for the respiration and nourishment of animals, for the growth of vegetables, the production and propagation of sounds, &c. but greatly contributes also to make our habitable earth that beautiful scene of variety which it now is. The numberless small particles of various kinds, which float in the air, receive the light from the sun, and like so many small specula or looking-glasses, reflect and scatter it through the air, and this occasions that light which we see in the daytime, by which our eyes are affected so strongly, as to render the fainter light of the stars insensible. By this means the stars are illuminated all round us by the sun, not only whilst he is above our horizon, but also for some time before his rising, and after his setting, so long as any of his rays can either directly, or by refraction, reach any part of the atmosphere within our visible horizon; for the air, as well as all other mediums which transmit light, refracts or bends the rays of it, if they come into it from a different medium. ——*Height, Weight, and Pressure of the Atmosphere.* Though it is impossible to assign the real height of the atmosphere, it nevertheless appears certain from experiments, that 45 or 50 miles is the utmost height where the density is sufficient to refract a ray of light; and, therefore, that may be accounted the altitude of the atmosphere, to the least sensible degree of density. If the air were of an equal density throughout, the height of the atmosphere might be determined: for it appears from experiments, that a column of air 72 feet high is equal in weight to one inch of water of the same base; so that the density of air is to that of water as 1 to 864. It has also been found by experiment, that the weight of a column of air, reaching to the height of the atmosphere, will be equal to the weight of a column of water of the same base, and 32 feet, or 384 inches high. Hence 864×384 gives 331776 inches, or somewhat more than five miles for the height of the atmosphere, were the density of the air every where the same as at the earth. But since its density decreases with the pressure, it will be more rarefied and expanded the higher we go; by which means the height of the atmosphere becomes indefinite, and terminates in pure æther. The pressure of the atmosphere on the whole surface of the earth is said to be equivalent to that of a globe of lead of sixty miles in diameter. Admitting therefore the surface of a man's body to be about 15 square feet, and the pressure about 15lb. on a square inch, it is computed that a man must sustain 32,400lb., or nearly 14 tons and a half weight; but the difference in the weight sustained in different states of the atmosphere may be as much as a ton and a half. Taking this calculation as a philosophical fact, and that every animal supports so many fifteen pounds as the surface of the body contains square inches, it may naturally be asked, why men and beasts are not crushed to pieces by such a prodigious weight of air? To this we reply that the repeated experiments which have been made, by means of the air-pump, fully demonstrate that it is owing to the equilibrium of the internal air, or the air included in all bodies, which, though it be small, can, by its reaction, counterpoise and resist the pressure of the external air, how great soever it be. But there are many other atmospheric phenomena, equally extraordinary, and still more difficult to explain, than those which have been here noticed. Among the principal ones are heat and electricity. The first raises and suspends the evaporated waters invisibly in the air, until some more

powerful attraction dissolves the union, and the moisture again revisits the earth in the various forms of clouds, mist, rain, dew, snow, hail, sleet, or hoar-frost; while to electricity may be principally attributed the lightning, the aurora-borealis, and other igneous meteors. The constituent parts of the earth's atmosphere are nitrogen and oxygen, which are found every where, and at all times, nearly in the proportion of 79 to 21. Besides these, there is a small portion of carbonic acid, a variable portion of aqueous vapour, and a very small quantity of hydrogen. It also contains, in the form of vapour, a multitude of adventitious substances, in those injurious mixtures known under the name of *miasmata*, the nature of which can hardly be investigated. By means, however, of the currents of air, which we term *winds*, the whole of the ingredients of the atmosphere are continually amalgamated together; for we find that though the atmosphere may diminish in lightness as we ascend, there is precisely the same general character pervading it throughout. By gradual, but almost insensible expansions, the equipoised currents of the atmosphere are disturbed, the stormy winds arise, and the waves of the sea are lifted up; and that stagnation of air and water is prevented which would be fatal to animal existence.

We will conclude this article by quoting a few of Professor Leslie's plain and simple facts on this interesting subject. 1. The mean height of the barometer (that is, the mean weight or pressure of the atmosphere) at the level of the sea, is the same at every part of the globe. 2. The mean temperature of the earth's surface increases gradually from the poles to the equator. 3. The mean temperature of the atmosphere decreases from below upwards in a regular gradation. 4. The heating and cooling of the atmosphere, by the changes of day and night, take place equally throughout its mass. 5. A wind generally sets from the sea to the land during the day, and from the land to the sea during the night, especially in hot climates. 6. As we advance towards the polar regions, we find the irregularities of the wind increased; and storms and calms repeatedly alternate, without warning or progression. 7. More than two currents may often be traced in the atmosphere at one time, by the motion of clouds, &c. 8. The force of the winds does not always decrease as the elevation increases, but, on the contrary, is often found to augment rapidly. 9. Northerly winds almost invariably raise the barometer, while southerly winds as constantly depress it. The same authority also states, that the British islands are situate in such a manner as to be subject to all the circumstances which can possibly be supposed to render a climate irregular and variable. Placed nearly in the centre of the temperate zone, where the range of temperature is very great, their atmosphere is subject, on the one side, to the impressions of the largest continent in the world; and, on the other, to the vast Atlantic Ocean. Upon their coasts the great stream of aqueous vapour perpetually arising from the western waters, first receives the influence of the land, whence emanate those condensations and expansions which deflect and reverse the grand system of equipoised currents. They are also within the frigorific effects of the immense barriers and fields of ice, which, when the shifting position of the sun advances the tropical climate towards the northern pole, counteract its energy, and present a condensing surface of enormous extent to the increasing elasticity of the aqueous atmosphere.

ATMOSPHE'RIC TIDES, are certain periodical changes in the atmosphere, similar to those of the ocean, and produced from nearly the same causes; of this description are the equinoctial winds.

AT'OM, in philosophy, a particle of matter, so minute as to admit of no division. Atoms are the *minima naturæ*, and are conceived as the first principal or component parts of all physical magnitude. From the earliest times of antiquity, down to the present day, two opinions directly opposed to each other, have divided the world on this subject; the one, that matter is composed of an assemblage of minute particles, or atoms, incapable of farther division; the other, that there is no limit to its divisibility, the smallest conceivable portion still consisting of an infinity of parts. The first of these theories, which is commonly distinguished by the name of the ATOMIC PHILOSOPHY, was originated in Greece by Leucippus; it was supported by Democritus, and subsequently improved by Epicurus and his disciples. The Epicureans professed to account for the origin and formation of all things by supposing that these atoms were endued with gravity and motion, and thus came together into the different organized bodies we now see.

ATOMI'C THE'ORY, a phrase expressive of a species of philosophy recently introduced into chemistry, and grounded on the axiom that "chemical union consists in the combination of the atoms of bodies with each other;" so that when two bodies chemically unite and form a third body, the two substances united are dispersed every where through the new compound.

AT'ONY, a defect of tone or tension, or a relaxation of the solids of the body.

A'TRA BI'LIS, a disposition to a dark biliary secretion, usually visible throughout the whole frame.

ATRACTYLIS, a plant called distaff-thistle, the leaves of which are aperitive and sudorific.

ATRIEN'SES, in Roman antiquity, servants entrusted with the care of the most valuable description of property.

ATRIP', in nautical language, is applied either to the anchor or sails. The anchor is *atrip* when it is just drawn out of the ground in a perpendicular direction. The top-sails are *atrip* when they are just started from the cap.

A VEGETABLE ALKALI, NAMED "ATROPIA," HAS BEEN EXTRACTED FROM THE ATROPA BELLADONNA, OR DEADLY NIGHTSHADE.

A'TROPA, or Deadly Nightshade, a genus of plants, one species of which, namely the Atropa Belladonna, is remarkable for bearing berries of a fine black colour, which are highly poisonous. The flowers are bell-shaped, dusky on the outside and purplish within. The fruit has a nauseous sweet taste, and is full of small kidney-shaped seeds.

A'TROPHY, a disease wherein the body, or some of its parts, not receiving necessary nutriment, insensibly waste away, and decay.

ATTACH'MENT, in law, the taking or apprehending a person, by virtue of a writ or precept. It differs from an arrest, inasmuch as it lays hold of the goods, as well as the person; and also from a distress, which seizes on lands, tenements, and goods; but an attachment on the goods and body.——Attachment of Privilege, is by virtue of a man's privilege to call another to that court whereto he himself belongs, and in respect whereof he is privileged to answer some action.——Foreign Attachment, is an attachment of money or goods, found within a liberty or city, to satisfy some creditor within such liberty or city. By the custom of London, and several other places, a man can attach money or goods in the hands of a stranger, to satisfy himself.

ATTACK', in the military art, a general assault, or onset, made to gain a post, or any particular point. Every combat consists of attack and defence: the first is generally the most advantageous; and an experienced general chooses it, if possible, even in a defensive war. Those attacks are considered the best, where all the forces can be directed in concert towards that point of the enemy on which his position depends.

ATTAIN'DER, the name of a law by which the estate and life of a traitor are forfeited. A Bill of Attainder is a bill brought into parliament for attainting persons convicted of high treason. A person attainted of high treason forfeits all his lands, tenements, and hereditaments; his blood is corrupted, and he and his posterity rendered base; and this corruption of blood cannot be taken off but by act of parliament.——Attainders may be reversed or falsified (i. e. proven to be false) by writ of error, or by plea. If by writ of error, it must be by the king's leave, &c. and when by plea, it may be by denying the treason, pleading a pardon by act of parliament, &c.

ATTAINT', in law, a writ that lies after judgment against a jury of twelve men that are charged with having given a false verdict.——Attaint, in the veterinary art, is a diseased limb proceeding from a blow.

ATTEL'ABUS, in entomology, a genus of insects of the beetle kind; the species of which are distinguished into those which have the jaws bifid, those which have the jaw one-toothed, and those which have the feelers clavate.——The Attelabus Coryli, found chiefly on hazel-trees, &c. is of the first kind.

ATTEN'TION, the applying the ear or the mind assiduously to any thing said or done.——Attention! the word of command given in the British army preparatory to any particular exercise or direction.

ATTEN'UANTS, medicines which promote the circulation as well as the discharge of all noxious and excrementitious matter. Of the vegetable kingdom, the whole tribe of acrid and bitter plants, are attenuants; of the animal kingdom, the volatile salts, as sal ammoniac, and saltpetre; and of the mineral kingdom, the mineral acid salts.

AT'TIC, in architecture, a sort of building, in which there is no roof or covering to be seen, as was usual in the houses of the Athenians.——The Attic, or Attic story, is the upper story of a house.——The Attic base is a peculiar kind of column, or support, employed both in the Doric and Ionic orders.

ATTI'RE, in botany, a name formerly used to denote the third part or division of the flower of a plant, the other two being the empalement and the foliation.——In heraldry, the term Attire designates the horns of stags and similar animals in blazoning coats of arms.

AT'TITUDE, in painting and sculpture, the position and gesture of a figure or statue; or such a disposition of their parts, as shall best display some grace or beauty, or serve to express the action and sentiments of the person represented.

ATTOL'LENS, in anatomy, an epithet applied to some muscles, otherwise called *levatores* and *elevatores*.

ATTOR'NEY, one who is appointed by another to do a thing in his absence. A *public* attorney is one who acts in the courts of law, and is a lawyer by profession. No attorney can practise in any court, unless he has been admitted and sworn an attorney of that particular court. As an officer of the court in which he is admitted, an attorney enjoys several privileges, and is liable, on the other hand, to the censure and correction of the judges.——A *private* attorney acts upon particular occasions, and is authorized by a *letter of attorney*, which gives one full power to act for another.

ATTOR'NEY-GEN'ERAL, a great law officer, appointed by the king to manage all affairs of the crown, either in criminal prosecutions or otherwise.

ATTRACTION, the power or principle by which bodies mutually tend towards each other; which varies according to the nature of the bodies attracted, and the circumstances under which this attraction takes place. Hence attraction is scientifically distinguished into the Attraction of Cohesion, Attraction of Gravitation, Attraction of Electricity, Attraction of Magnetism, and Chemical Attraction.——Attraction of Cohesion is peculiar to the component particles of bodies, by virtue of which they are firmly connected and held together.——As the attraction of cohesion is the cause of the solidity of small bodies,

WHEN THE MUTUAL ATTRACTION OF CERTAIN PARTICLES IS RESISTED, AS WHEN GUNPOWDER EXPLODES, IT IS CALLED REPULSION.

so is the ATTRACTION OF GRAVITATION that chain which, being diffused over the solar system, preserves the planets in their orbits, and makes them revolve about the centre of the system. That which in common language is called weight, is by philosophers explained to be *gravitation;* that is, a tendency to the centre of gravity. By gravitation a stone and all heavy bodies, if let fall from a height, are supposed to drop to the earth. All celestial bodies are supposed to have not only an attraction or gravitation towards their proper centres, but that they mutually attract each other within their sphere. The planets tend towards the sun and towards each other, as the sun does towards them. The earth and moon tend likewise reciprocally towards each. By this same principle of gravity heavenly bodies are kept in their orbits, and terrestrial bodies tend, as is supposed, towards the centre of the earth. And it is from this attraction that all the motion, and consequently all the changes in the universe, are supposed to arise.——ATTRACTION OF MAGNETISM is the particular tendency of certain bodies to each other, as that of the magnet, which attracts iron, of which we shall speak more particularly in its proper place; as well also of the ATTRACTION OF ELECTRICITY.

ATTRAC'TIVES, in medicine, a peculiar species of remedies which act by promoting external discharge.

AT'TRIBUTES, in theology, the several qualities or perfections of the divine nature, or such as we conceive to constitute the proper essence of God; as his wisdom, power, justice, goodness, &c.——ATTRIBUTES, in logic, are the predicates of any subject, or what may be affirmed or denied of any thing.——ATTRIBUTES, in painting and sculpture, are symbols added to a figure or group, which are characteristic of the principal subject. Thus the eagle is an attribute of Jupiter; a peacock, of Juno; a caduceus, of Mercury; a club, of Hercules, &c.

ATTRI''TION, the rubbing or striking of bodies one against another, so as to throw off some of their superficial particles.——ATTRITION is also often used for the friction of such simple bodies as do not wear from rubbing one against another, but whose fluids are, by that motion, subjected to some particular determination; as the various sensations of hunger, pain, and pleasure, are said to be occasioned by the attrition of the organs formed for such impressions.

AUCUPATION, fowling, or the art of bird-catching.

AUC'TION, a public sale of goods to the highest bidder. It is not generally known that a bidder at an auction under the usual conditions, may retract his bidding any time before the hammer is down. A mock auction is that which is conducted by unlicensed persons for fraudulent purposes.

AU'DIENCE, the persons assembled at a theatre, or other public place to see and hear the performances.——AUDIENCE, a ceremony used in courts at the admission of ambassadors or other public ministers to a hearing. In England audience is given to ambassadors in the presence chamber; and to envoys and residents in a gallery, closet, or any place where the king happens to be.——AUDIENCE is also the name of an ecclesiastical court, held by the archbishop of Canterbury, wherein differences upon elections, consecrations, institutions, marriages, &c., are heard.

AU'DIT, a regular examination of accounts by officers appointed for that purpose.

AU'DITOR, an officer of the king, or any corporate body, appointed annually to examine accounts.

AUDITO'RIUS MEA'TUS, the passage or entrance into the ear, that conveys the air to the auditory nerve.

AU'DITORY NERVES, a pair of nerves arising from the *medulla oblongata,* with two trunks, one of which is called the *portia dura;* the other, *portia mollis.*

AUGMENTA'TION, in heraldry, a particular mark of honour generally borne either on the escutcheon or a canton, as *argent,* a hand, *gules,* borne by every baronet who cannot claim higher honour.

AU'GES, two points in a planet's orbit; the one denominated the apogee, the other the perigee.

AUGETT'E, in fortification, the wooden pipe which contains the powder by which a mine is fired.

AU'GITE, a species of mineral, of which many varieties are found differing both in form and colour. Different names have been applied to some of its most remarkable varieties; as *diopside,* to greenish-white transparent crystals; *sahlite,* when it is in imperfectly prismatic and foliated masses; and *coccolite,* when in small, slightly-cohering grains. It is one of those few mineral substances, the composition of which may be imitated by the artificial mixture of its constituents, and subjecting them to fusion. Its component parts are silex, lime, magnesia, and oxyde of iron.

AU'GUR, an officer among the Romans appointed to foretell future events, by the chattering and feeding of birds. The augurs bore an augural staff or wand, as the ensign of their authority, and their dignity was so much respected, that they were never deposed, nor any substituted in their place, though convicted of the most enormous crimes.

AU'GURY, a species of divination, or the art of foretelling future events, practised by the ancients. It was distinguished into five sorts, viz., augury from appearances in the heavens; from birds: from chickens: from quadrupeds: and from portentous events. This, like other human errors, appears to have arisen from ideas tolerably rational at first. The regular appearance and disappearance of the birds, and the precision that is observable in almost their whole proceedings, might naturally impress an ignorant race of men with a belief that they either inherently possessed, or from time to time received, supernatural information. Accustomed to regulate by these mo-

"CONTIGUOUS ATTRACTION" IS THAT WHICH IS EXERTED BETWEEN MINUTE PARTICLES OR ATOMS, AT INSENSIBLE DISTANCES.

IN ANCIENT ROME THERE WAS A COLLEGE OR COMMUNITY OF "AUGURS," CONSISTING OF FOUR PATRICIANS AND FIVE PLEBEIANS.

nitors their rural occupations, the shepherd and the husbandman were led, by the most excusable association of ideas, to consult the same advisers in the few other concerns of life that fell to their lot: and on the foundation laid by superstition, imposture subsequently raised a fantastic structure.

AU'GUST, the eighth month of our year, containing 31 days. August was dedicated to the honour of Augustus Cæsar, because in the same month (before called Sextilis, or the sixth from March) he was created consul, thrice triumphed in Rome, subjugated Egypt to the Roman sway, and put an end to the civil wars.

AUGUSTA'LES, in Roman antiquity, an epithet given to the flamens or priests appointed to sacrifice to Augustus, after his deification, and also to the games celebrated in honour of him on the fourth of the ides of October.

AUGUSTA'LIA, a festival instituted by the Romans in honour of Augustus.

AUGUSTA'LIS PRÆFEC'TUS, a title peculiar to a Roman magistrate who governed Egypt, with a power much like that of a proconsul in other provinces.

AUGUS'TAN denotes something relating to the emperor Augustus; as *Augustan age, Augustan era*, &c.

AUGUS'TINES, a religious order, so called from St. Augustine, their founder, and vulgarly called Austin friars, or Christian hermits. Before the Reformation they had 32 houses in England. Among other things, this rule enjoins to have all things in common, to receive nothing without the leave of the superior; and several other precepts relating to charity, modesty, and chastity. There are likewise nuns of this order. The Augustines are clothed in black, and at Paris are known under the name of the religious of St. Genevieve, that abbey being the chief of the order.

AUGUSTIN'IANS, a religious sect of the 16th century, who maintained that the gates of heaven would not be opened till the general resurrection.

AUK, a bird of the Arctic seas, known as the Penguin or Razor-bill, but called by Linnæus *Alca*. This bird is observed by seamen never to wander beyond soundings, and accordingly they conclude, on its appearance, that land is not far off.

AU'LIC, an epithet given to certain officers in the *ci-devant* German empire, who composed a court which decided, without appeal, in all judicial processes entered in it. This court, which was proverbial for the slow administration of justice, had not only concurrent jurisdiction with the court of the imperial chamber, but, in many cases, exclusive jurisdiction. The right of appeal, possessed by the estates, existed also in regard to the judicial decisions of the aulic court.

AU'LOS, a Grecian measure of length equal to the stadium.

AUME, a measure of capacity, employed on the continent, equal to thirty-five English gallons.

AUN'CEL-WEIGHT, an ancient kind of hand-weighing. The auncel was a balance, with several scale-pans; and as it was supposed to give an advantage to the seller, its use was prohibited by statute.

AUNE, a measure of length employed on the continent, but varying considerably in different parts of Europe. It is generally about the length of an English ell.

AU'RA, an exhalation or vapour. Ancient chemists defined it to be a certain fine and pure spirit, found in every animal or vegetable body; but so subtile, as only to be perceptible by its smell.

AURE'LIA, that intermediate state in which many insects remain for some time, between the caterpillar form and the period in which they are furnished with wings, antennæ, and other organs appertaining to the perfect insect.

AURE'OLA, in its original signification, denotes a jewel, which is proposed as a reward of victory in some public dispute. Hence, the Roman schoolmen applied it to the reward bestowed on martyrs, virgins, &c., on account of their works of supererogation; and painters use it to signify the crown of glory with which they adorn the heads of saints, confessors, &c.

AU'RES MARI'NÆ, Ear-shells, in natural history, a name given to different species of the *haliotis*, which is an univalve shell-fish of a flatted shape, somewhat resembling the human ear.

AURE'US, a Roman gold coin, equal in value to twenty-five denarii.

AU'RICLE, in anatomy, that part of the ear which is prominent from the head, called by many authors *auris externa*. There are also Auriculæ Cordis, or auricles of the heart, which are appendages at the base of the heart, and are distinguished into right and left, the former of which is placed in the anterior, the latter in the hinder part. These are muscular bags, which move regularly with the heart, but in an inverted order.

AURIC'ULA, in botany, that species of primrose, called from the form of its leaves, *bear's ear*.

AURIC'ULAR CONFES'SION, a mode of confession among Roman Catholics, by whispering in the ears of their fathers, confessors, or priests.

AURI'GA, or the Waggoner, in astronomy, a constellation of the northern hemisphere, containing about 46 stars of the first six magnitudes.

AU'RIS, the term by which anatomists express the ear.

AURISCAL'PUM, a surgical instrument employed to operate on the ear.

AURO'RA, the morning twilight, or that faint light which appears in the morning when the sun is within 18 degrees of the horizon.

AURO'RA-BOREA'LIS, or Northern Lights, a kind of meteor appearing in the northern part of the heavens, most frequent and most brilliant during the winter solstice. We often see in the north, near the horizon, usually a short time after sunset, a dark segment of a circle, surrounded by a

brilliant arch of white or fiery light; and this arch is often separated into several concentric arches, leaving the dark segment visible between them. From these arches, and from the dark segment itself, in high latitudes, columns of light, of the most variegated and beautiful colours, shoot up towards the zenith, and, sometimes, masses like sheaves of light are scattered in all directions. In the Shetland islands, the *merry dancers*, as they are there called, are the constant attendants of clear evenings, and cheerers of the long winter nights. In still more northern countries, as Norway, Lapland, and Siberia, they greatly enliven the snowy landscapes. They commonly appear at twilight, near the horizon, of a dun colour, approaching to yellow; sometimes continuing in that state for several hours, without any sensible motion; after which they break out into streams of stronger light, spreading into columns, and altering slowly into a thousand different shapes, varying their colours from all the tints of yellow to the obscurest russet. They often cover the whole hemisphere, and then make the most splendid appearance. Their motions, at all these times are amazingly quick; and they astonish the spectator with the rapid change of their form. They break out in places where none were seen before, skimming briskly along the heavens, and are suddenly extinguished, leaving behind them a uniform dusky track. This is again illumined in the same manner, and as suddenly left a dull blank. In certain nights, they assume the appearance of vast columns, on one side of the deepest yellow, on the other declining away till it becomes undistinguished from the sky. They have generally a strong tremulous motion from the end, which continues till the whole vanishes. During the winters of 1837 and 1838 the aurora-borealis was several times witnessed in England; but we, who only see the extremities of this northern phenomenon, have but a faint idea of its grandeur or its motions. Various theories have existed respecting the cause of this phenomenon, but little doubt is now entertained of its being occasioned by the passage of electricity through the upper regions of the atmosphere; its appearance, in fact, exactly resembling the effects of artificial electricity when passing through rarefied air. There is the same variety of colour and intensity; the same undulating motion and corruscations; the streams exhibit the same diversity of character, at one moment minutely divided in ramifications, and at another beaming forth in one body of light, or passing in distinct broad flashes; and when the rarefication is considerable, various parts of the stream assume that peculiar glowing colour which occasionally appears in the atmosphere, and is regarded by the uninformed observer with astonishment and fear.

AU'RUM MOSA'ICUM, a combination of tin and sulphur, used by statuaries and painters, for giving a gold colour to their figures.

AU'RUM POTAB'ILE, tincture of gold a cordial liquor with leaf gold in it.

AU'RUM FUL'MINANS, a precipitate of gold, so called, because of the explosion which it makes by a gentle attrition.

AUS'PICES, a kind of soothsaying among the Romans, by the flight or singing of birds.

AUS'TRAL, relating to the south: thus the six signs on the south side of the equinoctial are called austral signs.

AUS'TER, the south wind.

AUSTRA'LIO PIS'CES, a constellation of the southern hemisphere, consisting of 24 stars, according to the Britannic catalogue.

AU'TOGRAPH, an epithet applied to whatever is written in a person's own handwriting, as an autograph letter, a letter of one's own writing.

AUTOM'ATON (see ANDROIDES). Every mechanical construction, which, by virtue of a latent intrinsic force not obvious to the sight, can carry on for a certain length of time such movements as resemble the results of human execution, is an automaton. But the term is generally applied to the figure of an animal, to which motion is given by wheels, springs, and weights, internally placed, and causing apparent animation; as the mechanical chess-player and flute-player. The practice of making these automata is much less frequent at present than formerly; ingenious mechanicians now-a-days finding themselves better rewarded by directing their talents to the self-acting machinery of modern manufactures. As Dr. Ure observes, "it is in our modern cotton and flax-mills that automatic operations are displayed to most advantage; for there the elemental powers have been made to animate millions of complex organs, infusing into forms of wood, iron, and brass, an intelligent agency." And, pursuing the subject with his characteristic zeal, while comparing the commercial greatness of Britain with the boasted monuments of Asiatic and Roman despotism, he says, "Such is the automatic system, replete with prodigies in mechanics and political economy, which promises, in its future growth, to become the great minister of civilization to the terraqueous globe, enabling this country, as its heart, to diffuse, along with its commerce, the life-blood of knowledge and religion, to myriads of people still lying in the region and shadow of death."

AU'TUMN, the third season in the year, which begins, in the northern hemisphere, on the day when the sun enters Libra, that is, on the 22d of September. It terminates about the same day in December, when the winter commences. Autumn is represented, in painting, by a man of mature age, clothed and girt with a starry girdle; holding in one hand a pair of scales equally poised, with a globe in each; and in the other a bunch of grapes and other fruit. His age denotes the perfection of this season; and the balance, that sign of the zodiac which the sun enters when our autumn begins.

AUTUM'NAL SIGNS, the three signs, Libra, Scorpio, and Sagittarius, through which the sun passes during the season of autumn.

AUXIL'IARY VERBS, in grammar, are such verbs as help to form or conjugate others; as, in English, the verbs "to have," and "to be."

AVA'TAR, a term used by the Hindoos to express an incarnation or descent of Vishnu, their deity: nine of which are believed to be passed, and the tenth yet to come.

A'VE MARI'A, the name given to the angel Gabriel's salutation to the Virgin Mary. Also, the chaplets and rosaries of the Romish church, which are divided into ave-marias and pater-nosters.

AV'ENUE, in ornamental gardening, a walk planted on each side with trees, and leading to a house, garden-gate, wood, &c., and generally terminated by some distant object.——AVENUE, in fortification, an opening or inlet into a fort, bastion, or the like.——In architecture, it means an approach to a palace or mansion, by a long walk of columns, arcades, statues, &c.

AV'ERAGE, the results from equal division of several sums added together. It is also a term used in commerce, among merchants and ship-owners, to denote the quota or proportion which each merchant or proprietor in the ship or lading is adjudged, upon a reasonable estimate, to contribute towards the expenses of the voyage, &c.

A'VIARY, a place set apart for feeding and propagating birds.

AVOIRDUPOIS', a weight used in England, the pound being 16 ounces.

AWARD', in law, the judgment of an arbitrator, or of one who is not appointed by the law a judge, but chosen by the parties themselves for terminating their difference.

AWL'WORT, the popular name of the *subularia aquatica;* so called from its awl-shaped leaves, which grow in clusters round the root.

AWEIGH', a sea term, denoting that the anchor is just drawn out of the ground, and hangs perpendicular.

AWN, a slender sharp process issuing from the glume or chaff in corn and grasses: the beard.

AWN'ING, a canopy, usually a piece of tarpaulin or a sail, extended over the decks or any other part of the ship, to afford shelter from the sun, rain, &c.

AXAYA'CAT, a Mexican fly, whose eggs, deposited on rushes and flags, in large quantities, are sold and used as a sort of caviare.

AX'ESTONE, a mineral, a sub-species of nephrite, of an olive or grass-green colour. It is found chiefly in New Zealand and the South Sea Isles, where it is used by the natives for axes and other instruments.

AXIL'LA, in anatomy, the arm-pit, or the cavity under the upper part of the arm.——AXILLA, in botany, the space or angle formed by a branch with the stem, or by a leaf with a branch.

AX'INITE, a mineral which sometimes occurs in lamellar masses, but commonly in crystals. Its edges are thin and sharp, like an axe, whence its name.

AXINOM'ANCY, a species of divination, among the ancients, performed by laying an agate stone on a red-hot hatchet, or by fixing a hatchet on a round stake so as to be poised; then the names of those suspected were repeated, and he at whose name the hatchet moved, was declared guilty.

AX'IOM, in philosophy, is such a plain, self-evident proposition, that it cannot be made more plain and evident by demonstration; because it is itself better known than anything that can be brought to prove it. By axioms, called also maxims, are understood all common notions of the mind, whose evidence is so clear and forcible, that a man cannot deny them without renouncing common sense and natural reason.

AX'IS, in astronomy, an imaginary right line supposed to pass through the earth, sun, planets, satellites, &c., and about which they perform their respective diurnal rotations. The earth and planets, in their progress through the annual orbit, move in such a manner that the axis of each always keeps parallel to itself, or points to the same part of the heavens. The axis of the earth is inclined to the ecliptic, in an angle of nearly sixty-six and a half degrees, a position which is well adapted for promoting the fertility of the earth and rendering it habitable.——AXIS, in geometry, a right line conceived to be drawn from the vertex of a figure to the middle of the base. It is so called because the figure, by revolving round this line, is conceived to generate a solid. The axis of the circle is the same as the diameter.——AXIS, in mechanics, a certain line about which a body may move, as the axis of a balance, &c.——AXIS, in optics, is that ray, among all others that are sent to the eye, which falls perpendicularly upon it, and which consequently passes through the centre of the eye.——AXIS, in anatomy, the second vertebra of the neck, so called from the head's turning on it like an axis.——AXIS, in botany, is a taper column in the centre of some flowers, about which the other parts are disposed.——*Axis in Peritrochio*, or, WHEEL AND AXLE; one of the five mechanical powers or simple machines, which is principally used in the raising of water. The power is applied at the circumference of the wheel, and the weight is raised by a rope that is gathered up on the axis while the wheel turns round.——*Axis of Oscillation*, is a line parallel to the horizon, passing through the centre, about which a pendulum vibrates, and perpendicular to the plane in which it oscillates.——*Axis of a Vessel*, is an imaginary line passing through the middle of it, perpendicular to its base, and equally distant from its sides.

AX'OLATE, a black water lizard found in Mexico.

AZA'LEA, in botany, a genus of plants, the chief species of which are flowering shrubs.

AN "AZIMUTH DIAL" IS A DIAL WHOSE STILE OR GNOMON IS AT RIGHT ANGLES, OR PERPENDICULAR, TO THE PLANE OF THE HORIZON.

AZEN'SALI, in botany, a sort of moss that grows on rocks; also a kind of black stone found among gold.

AZ'IMUTH, in astronomy, an arc of the horizon, intercepted between the meridian of the place, and the vertical circle passing through the centre of an object. ——MAGNETICAL AZIMUTH, is an arc of the horizon contained between the sun's azimuth circle and the magnetical meridian. ——AZIMUTH CIRCLES, or VERTICAL CIRCLES; imaginary great circles passing through the zenith and nadir, and cutting the horizon at right angles. The altitudes of the heavenly bodies are measured on these circles, which circles may be represented by screwing the quadrant of altitude on the zenith of any place, and making the other end move along the wooden horizon of the globe. ——AZIMUTH COMPASS, an instrument for finding in a more accurate manner than by the common sea compass, the magnetical amplitude of the sun or stars.

AZO'TE, or NITROGEN, the radical principle of atmospheric air; a species of gas of which the atmosphere contains nearly 4-5ths in bulk, and 3-4ths in weight; the other fifth and fourth being oxygen, without which the air will support neither life nor combustion. In its nature it is invisible and elastic, and capable of condensation and expansion. It immediately extinguishes animal life, and the flame of a candle. It has no taste; some plants live and flourish in it. It is not absorbed by water, but is capable of combining with oxygen; and with different proportions of this substance it forms atmospheric air, gaseous oxyde of azote, or nitrous oxyde, nitrous gas, nitrous acid, and nitric acid. Combined with hydrogen, it forms volatile alkali; and it enters into the composition of most animal substances.

AZ'OTITE, a kind of salt formed from the combination of the protoxyde of azote, or nitrous oxyde, with alkalies.

AZ'URE, the blue colour of the sky. Among painters, this word originally signified *lapis-lazuli*, and the blue colour prepared from it. At present it is called *ultramarine;* and the blue glass made from the earth of cobalt and other vitrifiable matters, which, when in masses, is called *smalt*, is, in the state of fine powder, known by the name of *azure*. Azure being employed to colour starch, is also called *starch-blue*. ——AZURE, in heraldry, the blue colour in the arms of any person below the rank of a baron. In the escutcheon of a nobleman it is called *sapphire;* and in that of a sovereign prince, *Jupiter*. In engraving, this colour is expressed by lines or strokes drawn horizontally.

AZ'YMA, in theology, the feast of unleavened bread among the Jews.

AZ'YMITES, in church history, Christians who administer the eucharist with unleavened bread. This appellation was given to the Latin by the Greek church, and also to the Armenians and Maronites.

NO ANIMAL THAT BREATHES CAN LIVE IN "AZOTE;" AND FROM THIS CIRCUMSTANCE IT TAKES ITS NAME, WHICH SIGNIFIES LIFE-DEPRIVER.

B.

B, the second letter, and first consonant, in the alphabet, is formed in the voice by a strong and quick expression of the breath, and a sudden opening of the lips; it is therefore called a *labial*, and its pronunciation differs but slightly from *p* and *v*. It is often used as an abbreviation for *Bachelor*, as B. A. Bachelor of Arts, B.D. Bachelor of Divinity, &c., and for *before*, as B.C., Before Christ. B, as a numeral among the Romans, stood for 300, and with a dash over it for 3000. B, in chronology, stands for one of the dominical letters, and in music for the seventh note in the gamut.

BA'AL, an idol among the ancient Chaldeans and Syrians; supposed to represent the sun, and to be the same as the Bel or Belus of the Greeks. The word signifies also lord or commander; and the character of the idol was varied by different nations, at different times. Of the manner in which Baal was worshipped, we have but imperfect and contradictory statements; but we are informed in Scripture that human victims were among the sacrifices offered to him.

BABOON', a large kind of ape with a short tail, which forms one division of the genus *Simia* in the Linnæan system. They are the most disgustingly lascivious of all the monkey tribe; and such is their natural ferocity, that they can never be said to be properly tamed into obedience: they ought not therefore to be admitted into zoological exhibitions for the public.

BABYLON'ICS, in literary history, a fragment of the ancient history of the world, ending at 267 years before Christ; and composed by Berosus, a priest of Babylon, about the time of Alexander.

BABYLON'ICA, in antiquity, a species of rich weaving so called from the city of Babylon, where the art of weaving hangings with a variety of colours was first invented.

BABYROUS'SA, in zoology, the Indian hog. This quadruped belongs to the genus *sus*, in the class *mammalia;* and its most distinguishing characteristic is, that from the outside of the upper jaw spring two teeth twelve inches long, bending like horns, and almost touching the forehead.

BAC'CHÆ, the priestesses of Bacchus, who, crowned with vine and ivy leaves, and clad in the skins of wild beasts, celebrated the orgies of their god with frantic cries and gestures. They were also called *Mænades, Bassarides*, and *Thyades*.

BACCHANA'LIA, feasts celebrated in honour of Bacchus by the ancient Greeks and Romans. Their times of celebration were spring and autumn: the former in the city, and the latter in the fields. The company personified Silenus, Pan, Fauns, Satyrs, &c.; and in this manner appeared in public, night and day, counterfeiting drunkenness, dancing obscenely, committing all kinds of licentiousness and debauchery; and running over the mountains and forests, with horrible shrieks and howlings, crying out, *Evoe Bacche*, or *Io Bacche*. Livy informs us, that during the Bacchanalian feasts at Rome, such shocking disorders were practised under the cover of the night, and those who were initiated were bound to conceal them by an oath attended with horrid imprecations, that the senate suppressed them first in Rome, and afterwards throughout all Italy.

BAC'CHARIS, a sweet-scented medicinal plant, growing mostly in rough and dry grounds. The roots smell like cinnamon, and are a powerful stimulant.

BACCIF'ERÆ, the term applied to all berry-bearing plants. Hence the English adjective *bacciferous*.

BACH'ELOR, in its primitive sense, means a man who has not been married: and in all its various senses it seems to include the idea of youth or immaturity, except when it has the word *old* prefixed.——Bachelor, in universities, is one who has attained the first degree in the liberal arts and sciences, or the first degree in the particular study to which he devotes himself. This degree or honour is called the *baccalaureate*. At Oxford and at Cambridge, to attain the degree of bachelor of arts, a person must have studied there four years: after three more, he may become master of arts; and at the end of another series of seven, bachelor of divinity.——Bachelor, an ancient denomination of knighthood, given to such as had not a sufficient number of vassals to carry their banner; or to such knights-bannerets as were not of age to display their own banner; or, to young cavaliers, little more than initiated to arms; or, in a very honourable sense, to him who had overcome his antagonist in his tournament.——Knights-Bachelors, the lowest rank of knights, whose title was not hereditary. These are the *knights* of modern days.

BACK, a word used in various nautical phrases; as to "back an anchor;" to "back the sails;" to "back astern," &c.; meaning thereby, to carry out a small anchor to support the larger one; to arrange the sails for the ship to retreat, or move back, in consequence of the tide favouring her; to manage the oars in rowing in a contrary direction to the usual method, to move a boat stern foremost.——The word *back* has also various figurative as well as technical applications.

BACKGAM'MON, an ingenious game played by two persons with the help of dice, on a board or table divided into parts, whereon are twenty-four black and white spaces called points.

BACK'PAINTING the method of painting mezzotinto prints pasted on glass with oil colours.

BACK'STAFF, an instrument formerly used for taking the sun's altitude at sea: it had its name because the back of the observer was turned towards the sun. This quadrant is now superseded by more accurate instruments.

BACK'STAYS, the ropes or stays which extend from the topmast heads to both sides of a ship, to assist the shrouds in supporting the masts, when strained by a weight of sail, and to prevent them from giving way and falling overboard.

BAC'ULE, in ancient fortification, a kind of portcullis, or gate, made like a pit-fall with a counterpoise, and supported by two great stakes.

BAC'ULITE, a genus of fossil shells of a straight form, in their cellular structure resembling the ammonites.

BACULOM'ETRY, the art of measuring accessible heights, by bacculi, or staves.

BADGE, an exterior ornament of a coat of arms, originally worn by the retainers or attendants of the nobility. It fell into disuse in the reign of queen Elizabeth.——In naval architecture, an ornament placed on the outside of ships near the stern, containing either a window, or the representation of one.

BADGER, a quadruped of the genus *ursus*. It inhabits the north of Europe and Asia, and is found in many parts of England. It is of a clumsy make, with short, thick legs, and long claws on the fore-feet; very indolent and sleepy; feeds on insects or berries, burrows during winter, hunts by night, and lies concealed by day.

BADIA'GA, a plant resembling sponge, which grows in Russia, and is said to take away the livid marks from bruises.

BAG, in commerce, a determinate quantity of goods contained in a bag, varying in size, according to the article, as a bag of hops, a bag of pepper, &c.

BAG'GAGE, in military affairs, denotes the clothes, tents, utensils of divers sorts, provisions, and other necessaries belonging to an army.

BAG'NIO, (pron. *ban'yo*) a house with conveniences for bathing, cupping, sweating, and otherwise cleansing the body. It also means a brothel.——In Turkey, it is the name of prisons where slaves are kept.

BAG'PIPE, a musical wind instrument used chiefly in Scotland and Ireland. It is of high antiquity, and consists of two parts: namely, a leathern bag, and pipes for admitting and ejecting the air. One of the pipes called the drone, with which the bass part is played, never varies its tone. The third pipe is played on by compressing the bag under the arm.

BAIL, in law, sureties given for the appearance, when required, of a person in custody. *Common Bail* is in common cases, where any sureties may be taken; but *Special Bail* is necessary in matters of greater importance, where special surety of two or more persons must be taken according to

the value of the cause.——*To admit to bail*, is to release upon security given by bondsmen.——*To justify bail*, is to prove by the oath of the person that he is worth the sum for which he is surety beyond his debts.

BAILEE', in law, the person to whom the goods of the one that is bailed are delivered. The party who delivers the goods is termed the BAILLOR.

BAI'LIFF, a subordinate magistrate or officer appointed within a particular province or district, as bailiffs of hundreds, liberties, courts, barons, &c. Sheriffs' bailiffs are officers appointed by the sheriff to execute writs. These, being bound in bond to the sheriff for the due execution of their office, are called bound bailiffs, vulgarly bum-bailiffs.——WATER-BAILIFF, an officer who searches ships, gathers toll for anchorage, and arrests persons for debt upon the water.

BAIL'IWICK, a liberty exempt from the power of the sheriff, in which district the lord exercises the office of sheriff, and appoints his own bailiff. A bailiwick is also the hundred, or district, through which the authority of a bailiff extends.

BAIO'CO, a small coin in the papal states, one hundred of which make a Roman crown.

BAI'RAM, a festival among the Turks, celebrated after the fast of Ramazan, when it is customary to send presents from one to another, and otherwise to express the joy they feel on the occasion.

BAIZE, a coarse, woollen stuff, with a long nap, sometimes frized on one side, without wale, being manufactured on a loom, with two treddles, like flannel.

BALÆ'NA, or the Whale species, a genus of animals in the Linnæan system, class *Mammalia*, order *Cete*. There are several kinds; the generic character being *horny laminæ* in the upper jaw in place of teeth, and a *spiracle* with a double external orifice on the top of the head.

BAL'ANCE, an instrument for weighing commodities, consisting of a beam or lever suspended exactly in the middle, with a scale hung to each extremity, of precisely equal weight. Hence the term balance, in mechanics, is defined as a peculiar application of that simple mechanical power called the lever, by which it is rendered useful in determining the difference or equality of weights in heavy bodies, and consequently their masses or quantities of matter. The characteristic difference between a *balance* and a *lever* is, that the former is suspended from something which is above it, the latter supported by a prop or fulcrum below it. The difference between the use of the *scales* and the *steelyard*, consists in this, that as in the former you make use of a larger power, or more weight, to estimate the weight of a heavier body; in the latter you use the same power, but give it a greater velocity with respect to that of the weight, by applying it further from the fixed point, which produces the same effect.——The *hydrostatic balance* is an instrument to determine the specific gravity of fluid and solid bodies.——The *assay balance* is used to ascertain the exact weight of the different metallic bodies of which the ore is composed.——In accounts, *balance* is the *difference of two sums*; hence, to pay a balance, is to pay the difference, and make the two accounts equal.——In astronomy, *Libra*, or the *balance*, is a sign in the zodiac, which the sun enters at the autumnal equinox.

BALANCE OF TRADE, in commerce, the equality between the value of the commodities bought of foreigners, and the value of the native productions exported. When a nation imports to a greater extent than it exports, the balance of trade is said to be against it; that is, it loses by its trade; and *vice versâ*. The native commodities of a nation are its income, its property; and it is apparent that wherever purchases exceed the income, there is a tendency to bankruptcy.

BALANCE OF POWER, in politics, that just equipoise or equal state of power between nations, which may be consistent with their general security and prosperity.

BAL'ASS RUBY, in mineralogy, a species of ruby, with crystals of a regular octahedral form.

BALBITO'DES, in anatomy, the cavity at the extremity of the *humerus* to which the *ulna* is articulated.

BALBU'TIES, in medicine, a stammering and precipitate speech.

BAL'CONY, in architecture, a projection from the front of a house, surrounded by a balustrade or open gallery. In large buildings they are susceptible of considerable elegance of decoration, and may be made highly ornamental to the edifices to which they are attached.

BALD'ACHIN, in architecture, a kind of canopy erected over an altar.

BALE-GOODS, in commerce, such goods as are exported or imported in bales.

BAL'ISTES, or FILE-FISH, a genus of animals, so called from the resemblance of their back-bone to a file: they are remarkable for the brilliancy of their colours.

BALL, in military affairs, comprehends all sorts of bullets for fire arms, from the cannon to the pistol; those for pistols and small arms are made of lead, but cannon-balls are formed of cast iron.——In farriery, any medicine given to a horse in the shape of a ball.——FIRE-BALL, a meteor, or luminous globe darting through the atmosphere. Also, a bag of canvas filled with gunpowder, sulphur, pitch, &c., to be thrown by the hand, or from mortars.

BAL'LAD, a short lyric composition, or tale in verse, of a simple and popular character; set to music, and generally in most esteem by the lower classes. It originally meant a solemn song of praise.

BAL'LAST, heavy matter, as stone, gravel, iron, &c. thrown into the hold of a ship, to sink her to a proper depth in the water, that she may be capable of carrying a sufficient quantity of sail without over-setting.

BALLATOON' a heavy luggage boat employed on the rivers about the Caspian lake.

BAL'LET, a dramatic entertainment,

consisting of action and dancing only, invented by the Italians.

BALLIS'TICS, the art of using projectiles.——The *ballistic pendulum* is a machine for ascertaining the velocity of military projectiles.

BALLISTA, or BALISTÆ, a military engine used by the ancients, in battle, to throw stones, darts, and javelins.

BALLOON', in a general sense, means any spherical hollow body; but it more particularly designates a globe made of silk, and rendered air-tight by gum, which, when filled with hydrogen gas, from ten to thirteen times lighter than atmospherical air, ascends into the atmosphere, and will convey heavy bodies suspended to it. [See the article PNEUMATICS.]——In fireworks, a *balloon* is a ball of pasteboard, or kind of bomb, filled with combustibles, which, bursting in the air, exhibits sparks of fire like stars.——In chemistry, it means a round vessel with a short neck; or, a glass receiver of a spherical form.

BAL'LOT, the method of determining an election by means of small balls, black or white, put privately into a box.

BALLO'TA, in botany, the plant called stinking or black hoarhound. In the Linnæan system, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia;* the species of which are mostly perennials, but the sweet-smelling hoarhound is an annual.

BALLOTA'DE, in horsemanship, the leap of a horse between two pillars, or upon a straight line, so that when his fore feet are in the air, he shows nothing but the shoes of his hind feet, without jerking out; differing in that respect from the *capriole*.

BALLS, in electricity, are two pieces of cork, or pith of elder, nicely turned in a lathe to the size of a small pea, and suspended by linen or silken thread, intended as electrometers, to discover small quantities of electricity.——BALLS, in meteorology, luminous bodies, generally appearing at a great height above the earth, with much splendour. Their tract is usually from north to south, and their velocity is very great.

BALM, in botany, the name of several aromatic plants.——The BALM OF GILEAD, or balsam of Mecca, is the dried juice of a small tree or shrub growing in Syria: it has a warm aromatic taste, and an exquisitely fragrant smell. It is highly esteemed by the Turks as an odoriferous unguent and cosmetic; but its scarcity is such, that the genuine balsam is seldom exported as an article of commerce. We are informed by Josephus, the Jewish historian, that the balsam of Gilead was one of the trees given by the queen of Sheba to Solomon; and it appears from the Scriptures that it was in high repute among the nations of the East.

BAL'NEUM, in antiquity, a private bath or bathing place, in distinction from the *balneæ*, which were public baths.——In chemistry, a contrivance to modify and regulate the heat in various chemical processes, particularly distillations, by the use of different intermedia. When the degree of heat required is below that of boiling water, a vessel containing that fluid is interposed between the fire and the substance to be acted upon; and when a superior degree of heat is necessary, sand, or some other matter of a similar nature is employed.

BAL'SAM, an oily aromatic, resinous, or liquid substance, flowing either spontaneously, or by means of incision from certain plants, and used in the cure of several kinds of wounds, diseases, &c. Thus we have the balsam of Copaiva; the balsam of Tolu; the balsam of Peru.——*Factitious* or *artificial balsams*, are certain compositions chiefly of balsamic and healing ingredients, made by apothecaries in imitation of the native balsams.

BALSAM'ICS, in pharmacy, softening, restoring, healing and cleansing medicines; of gentle attenuating principles; warm, stimulating, and demulcent.

BAL'USTER, (often improperly written *bannister*), in architecture, a small turned column usually introduced between piers, on the upper parts of large buildings under windows, and on balconies, &c.

BALUSTRA'DE, a series or row of balusters, joined by a rail: serving as well for rest to the elbows, as for a fence or inclosure to balconies, altars, staircases, &c.

BAMBOO', a very large species of the *arundo*, or cane; it grows about the tropical regions, and was a native of Asia, but it has long since been introduced into the West-India Islands. It is used in building, in making bridges, vessels, boxes, caps, baskets, mats, and other utensils and furniture. Paper is likewise manufactured from it: it is the common fence for gardens and fields, and is used for pipes to convey water wherever it is wanted. The leaves are generally put round the chests of tea which are sent to Europe from China, to form a kind of mat.

BANA'NA, the tree and fruit of the plantain, a species of palm. Dampier compares it when stripped of its integuments, to a large sausage, in size and shape; and to fresh butter in winter, as to substance and colour. Its taste resembles that of a ripe and luscious pear.

BAND, in architecture, any flat, low member or moulding, which is broad but not deep.——The word *band* is applied to denote a company of persons engaged in one common design; as, a *band of music*, viz., the collective body of instrumental performers in a regiment, popularly termed *the band*.——*A band of soldiers* designates a troop or company, who fight under the same standard.——The *band of pensioners*, in England, is a company of 120 gentlemen, who receive a yearly allowance of £120, for attending on the sovereign on certain solemn occasions.

BAND'AGE, in surgery, a fillet, roller, or swathe, used in dressing and binding up wounds, restraining dangerous hæmorrhages, and in joining fractured or dislocated bones.

BANDAN'NA, a kind of calico-printing, practised in India from time immemorial, on which white or brightly-coloured spots

MONTGOLFIER'S FIRST BALLOON ASCENDED AT PARIS IN 1783; LUNARDI MADE HIS FIRST ASCENT IN ENGLAND IN 1784.

MESSRS. GREEN, HOLLOND, AND MASON MADE THEIR AERIAL VOYAGE IN 1836, FROM LONDON TO NASSAU, IN GERMANY, 480 MILES, IN 18 HOURS!

THE FIRST REGULAR BANKER IN LONDON IS SAID, BY PENNANT, TO HAVE BEEN MR. FRANCIS CHILD, IN THE REIGN OF CHARLES II.

THE PRESENT BANK OF "CHILDS AND CO.," NEAR TEMPLE-BAR, STANDS ON THE SPOT WHERE THEIR ANCESTOR'S BANK WAS FIRST ESTABLISHED.

are produced on a red or dark ground; but by the joint resources of mechanical and chemical science, the European imitations have now far surpassed, in beauty and precision, the oriental patterns.

BANDOLEER', a large leathern belt, thrown over the right shoulder, and hanging under the left arm, worn by ancient musketeers, for sustaining their fire-arms and musket-charges.

BANGUE, the name of an opiate used in the East, made from the leaf of wild hemp. It is used, by the Mahometans, for the same purpose as wine and spirits are by the Christians.

BANDITTI, a term peculiarly denoting companies of armed robbers, formerly common in Italy and France; but sometimes also used, in a more general sense, for robbers, pirates, outlaws, or others, united for nefarious purposes.

BAN'IANS, a caste of the Hindoos, whose profession is trade and merchandise; and, in India and Asia, they are the great factors and bankers, as the Jews are in the West. They believe in the transmigration of souls, and not only abstain from eating the flesh of animals, but endeavour to release even the most noxious from the cruelty of others. They are mild in temper, and honest in their dealings; and are so cautious of having communication with any but their own caste, that if any of another nation or tribe has drunk out of or touched their cup, they break it.

BAN'IAN-DAYS, a proverbial expression, imported from the Asiatic colonies, used for a short or indifferent dinner, or days on which no animal food is eaten: in allusion to the Banians above described.

BAN'IAN-TREE, one of the greatest wonders of the vegetable kingdom. It never dies, and continually extends itself; for every branch shoots downward, and, striking into the ground, becomes itself a parent tree, whose branches, in like manner, spread. One of them, the Cubbeer Burr, has 350 stems, equal to large oaks, and more than 3000 smaller ones, covering space sufficient to shelter 7000 persons. Its branches are crowded with families of monkeys, and with birds of every description, and also with enormous bats, all of which find luxurious subsistence upon the rich scarlet figs that grow upon it.

BANK, in commerce, an establishment for the receiving of moneys and letting them out on interest. It may likewise be defined, a place used as a common repository of the money of individuals or of companies. Also, a company of persons concerned in a private bank; or the directors of an incorporated one. The basis of all banking is the profitable use to which the banker or company can apply the capital which is deposited. The first bank was established at Venice about 1157, and the name of Banco was given to it in Italian, from the bench which the money-changers or bankers used to sit upon in their burses or exchanges.

BANK-NOTE, or BANK-BILL, a promissory note, issued by a banking company, properly signed and countersigned, payable to the *bearer* in the current coin of the realm, on demand.

BANK OF ENGLAND. In the fifth and sixth years of William and Mary, [A. D. 1694, 1695] in consideration of a loan to government of £1,200,000, at an interest of almost eight *per cent*, a company was incorporated by the name of the "Governors and Company of the Bank of England," with a restriction by which they were prevented from dealing in any other than money concerns. The profits of the company arise from the interest received from government on the permanent debt; on their annual advances on exchequer bills, &c., from their allowance for receiving the contributions to loans, and for paying the dividends on the public funds; from dealing in bullion, and from their large discounts with a mere paper currency. It is said, on good authority, that for conducting the various pecuniary transactions of the exchequer, for receiving the taxes, paying the interest of the public debt, &c. the Bank of England receives a per centage, or commission, which amounts annually to about 260,000*l.* to which must be added the profit derived from the use of a floating balance due to the public, never less in amount than four millions sterling. This balance, employed in discounting mercantile bills at the rate of four per cent. yields a revenue of 160,000*l.* per annum, which being added to the commission of 260,000*l.* gives a total of 420,000*l.* as the profit which the proprietors of bank-stock derive every year from the connection subsisting between that establishment and the Treasury. The affairs of this company are in the hands of a governor, deputy-governor, and twenty-four directors, who are annually elected by the general court.

BANK'ER, a person who trafficks in money, by receiving the current cash of individuals free of interest, and negotiating with it, either in the discount of bills, or the advance of money on sufficient securities. The monied goldsmiths, in the reign of king Charles II. first acquired this name.——The Romans had two sorts of bankers, whose office was much more extensive than that of the bankers among us; their's being that of public affairs, in whom were united the functions of a broker, agent, banker, and notary, managing the exchange, taking in money, assisting in buying and selling, and drawing the writings necessary on all these occasions.

BANK'RUPT, in a general sense, is a trader who fails or breaks, so as to be unable to carry on his business or pay his debts. In all cases, some act of bankruptcy must be committed, before a creditor can render his debtor a bankrupt; and an act of bankruptcy is an act of such a nature as evinces an intention on the part of a debtor to deprive his creditors of the security which they might have in the possession of his person or his property. The following are among the chief acts of bankruptcy. 1. Departing from the realm, whereby a man withdraws himself from the

jurisdiction and coercion of the laws. 2. Departing from his own house, and thus secreting himself. 3. Keeping in his own house, except for just and necessary cause, so as not to be seen or spoken with by his creditors. 4. Procuring, or suffering himself willingly to be arrested, or outlawed, or imprisoned, without just and lawful cause. 5. Procuring his money, goods and chattels, and effects, to be attached or sequestrated. 6. Making any fraudulent conveyance of his property to a friend, or secret trustee.

BAN *(bannum)*, in the feudal law, a solemn proclamation or publication of any thing. Hence the custom of asking, or publishing the bans, before marriage.——Ban, in military affairs, a proclamation made in the army, by beat of drum, sound of trumpet, &c., requiring the strict observance of discipline, either for the declaring a new officer, or punishing an offender.——The word Ban also means an edict of interdiction or proscription. Thus, to put a prince under the *ban* of the empire, is to divest him of his dignities, and to interdict all intercourse and all offices of humanity with the offender.

BAN'NER, a square flag, or the principal standard belonging to a prince or state. ——In botany, the upper petal of a papilionaceous corolla.

BAN'NERET, an ancient order of knights or feudal lords, who, possessing several large fees, led their own flag or banner. As the spirit of the feudal system declined, persons came to be created bannerets, and hence the institution must have become merely titular. The last knight of this description was Sir John Smith, on whom the honour was bestowed after Edgehill fight, for rescuing the standard of Charles I. On the day of battle, the candidate presented his flag to the king or general, who cutting off the train or skirt, and making it a square, returned it again. Hence, bannerets are sometimes called knights of the square flag.

BAN'NOCK, a kind of oat-cake, baked in the embers, or on a stone placed before the fire; it is common in Scotland and the northern parts of England.

BAN'QUETTE, in fortification, the elevation of earth behind a parapet, on which the garrison of a fortress may stand, on the approach of an enemy, in order to fire upon them.

BA'OBAL, a cooling acid fruit, of the gourd kind, a native of Africa.

BAP'TISM, a rite of the Christian religion, by which the members of its church are received into the communion. Almost all sects of Christians style baptism a sacrament, and consider its use as important; but the manner in which it ought to be performed, and the effects to be derived from it, have been subjects of much controversy.

BAP'TISTS (a contraction of Anabaptists), a Christian sect who practise the baptism of adults instead of that of children.

BAP'TISTERY, in ecclesiastical writers, a place in which the ceremony of baptism is performed. In the ancient church, it was one of the *exedræ* or buildings distinct from the church itself, and consisted of a porch or ante-room, where the persons to be baptised made their confession of faith, and an inner room where the ceremony of baptism was performed. Thus it continued till the sixth century, when the baptisteries began to be taken into the church-porch; and afterwards into the church itself.

BAR, the partition which separates the members of a court of justice from those who have to report or hear. It is also applied to the benches, where the lawyers are seated, because anciently there was a bar to separate the pleaders from the attorneys and others. Hence those who are called to the bar, or licensed to plead, are termed *barristers*, an appellation equivalent to *licentiate* in other countries.——Bar, in law, a plea of a defendant, which is said to be sufficient to destroy the plaintiff's action. ——Bar, in music, a stroke drawn perpendicularly across the lines of a piece of music, including between each two a certain quantity or measure of time.——Bar, in heraldry, an ordinary in form of the fesse, but much less.——A bar of *gold* or *silver* is an ingot, or wedge, from the mines, run in a mould and unwrought. A bar of *iron* is a long piece wrought in the forge.——The word Bar is also used figuratively for any tribunal; as, the *bar* of public opinion.

BARALYP'TON, in logic, an indirect mode of syllogism, consisting of two universals and one particular affirmative proposition: as, "Every animal is endued with sense; every man is an animal; therefore, something endued with sense is man."

BARAN'GI, certain officers in the Greek empire, who had the keys of the city in charge where the emperor resided.

BARA'THRUM, in antiquity, a deep pit, with sharp spikes at the top and bottom, into which condemned persons were cast headlong, at Athens.

BAR'ATRY, or BAR'RATRY, in commerce, a term used when the master of a vessel or the mariners cheat the owners by embezzling their goods, or running away with the ship.

BARB, the points that stand back in the head of an arrow or fishing-hook, to prevent them from being drawn out easily.——The name of a horse of the Barbary breed, remarkable for its swiftness.——Any roughness that grows and resembles a beard; as the down with which the surface of some plants are covered; the tuft of hairs at the point of leaves.

BAR'BACAN, or BAR'BICAN, an outer defence to a city or castle, used especially as a defence to a city or walls; also an aperture made in the wall of a fortress through which to fire upon an enemy.

BAR'BARA, in logic, an arbitrary term for the first mode of the first figure of syllogisms, consisting of three universal propositions: as, "All animals are endued with

AT THE PASCHAL SEASON, THE JEWS BAPTIZED THEIR PROSELYTES, IN ORDER THAT THEY MIGHT EAT THE PASSOVER.

THE STING OF AN INSECT USUALLY REMAINS IN THE WOUND IT INFLICTS, ON ACCOUNT OF THE SIDES OF ITS POINT BEING "BARBED."

sense; all men are animals; therefore, all men are endued with sense."

BARBA'RIAN, a name given by the ancient Greeks and Romans, to all who were not of their own country, or were not instituted in their language, manners, and customs. In this sense the word signified with them no more than foreigner, not signifying, as with us, a wild, rude, or uncivilized person.

BAR'BARISM, in a general sense, a rudeness of language or behaviour.——In grammar, an offence against the purity of style or language; or a mode of speaking or writing contrary to the true idiom of any particular language.

BAR'BEL, a fish of the genus *Cyprinus*, which lies in holes near the banks, and feeds on testaceous animals, worms, &c.

BAR'BLES, or BARBS, in farriery, the knots or superfluous flesh that grow up in the channels of a horse's mouth; that is, in the intervals that separate the bars, and lie under the tongue.

BARD, the name given to those individuals of semi-barbarous tribes, whose genius or imagination enabled them to describe events in elevated or measured language. Homer was one of these bards among the early Greeks; Ossian another among the ancient Irish; and their rhapsodies were the foundations of the art of poetry, which has been cultivated with success by all civilized nations. In the first stages of society, in all countries, bards have made a conspicuous figure; and the "light of the song" has been the morning-beam that first broke upon the darkness of ignorance: but no where does it appear, did ever verse and its professors receive so much public regard as under the druidical establishment; a regard with which they continued to be honoured long after that system had perished. In battle the bards of the Celtic tribes raised the war-cry, and in peace they sung the exploits of their heroes, celebrated the attributes of their gods, and chronicled the history of their nation. Originally spread over the greater part of western Europe, they seem to have been the heralds, the priests, and the law-givers of the free barbarians who first occupied its ancient forests, until, by the gradual progress of southern civilization and despotism, they were driven back into the fastnesses of Wales, Scotland, and Ireland, where the last echoes of their harps have long since died away.

BARGE, in naval affairs, a boat of state and pleasure, adorned with various ornaments, having bales and tilts, and seats covered with cushions, and carpets, and benches for many oars; as a company's barge, an admiral's barge, &c. It is also the name of a flat-bottomed vessel employed for carrying goods on a navigable river, as those upon the river Thames, called west country barges.

BARILLA, the name of a crude soda obtained by the incineration of the *salsola soda*, a plant cultivated in Spain and Sicily, the ashes of which are used in making glass, bleaching linen, and in the finishing process of the hard soap manufacture.

BARIUM, a metal so called by Sir Humphrey Davy, the discoverer, which is obtained by the chemical decomposition of barytes.

BARK, the exterior part of trees, corresponding with the skin of animals. The bark may be divided into the outward skin or cuticle, and the inner substance or cortex. The outward skin, or cuticle, seems to derive its origin from the inner or cortical substance, and to be nothing more than the old bark dried and shrivelled up, being supplanted yearly by a new one, after the same manner as a snake casts its skin. It is composed of little bladders or vesicles horizontally placed, so as to form a ring; among which are also intermixed, more or less, several parallel woody fibres or sap vessels. The inner substance consists, 1: of several enfoldments of woody fibres, interwoven in the manner of a net, and wrapping over each other like the coats of an onion. 2: of a number of small bladders or vesicles, sometimes of an oval, and sometimes of an angular figure, which fill up the spaces between the said fibres, and are placed in lines horizontally towards the wood. And 3: of its own peculiar vessels, which contain the proper and specific juice of the plant. It is observed that trees stripped of their bark in the time of the sap, and suffered to die, afford heavier timber, more uniformly dense, stronger, and fitter for service, than if the trees had been cut down in their healthy state.

BARK, (PERUVIAN), a most valuable medicine, is the produce of various species of the *Cinchona*, which is the spontaneous growth of many parts of South America, but more particularly of Peru. The tree somewhat resembles a cherry-tree in appearance, and bears clusters of red flowers. It was formerly called *Jesuit's bark*, from its having been introduced into Europe by the members of that fraternity who resided in South America, and who for many years derived from it a source of great profit. Its medicinal uses have long been well known; but it was not till lately that its medicinal properties were discovered to depend upon the presence of a substance called *quinine*, which exists, more or less, in all kinds of Peruvian bark. This discovery was made by Messrs. Pelletier and Cavatou, who also ascertained that the most useful and permanent form of the substance was that of a neutral salt, in which it was combined with sulphuric acid, constituting the celebrated *sulphate of quinine*.

BARLEY, a valuable kind of grain principally used in England in the state of malt for brewing.——Pearl Barley and French Barley, the grain freed from the husk by a mill; the distinction between the two being, that the pearl barley is reduced to the size of small shot, all but the very heart of the barley being ground away.——Barley-corn, the least of our long measures, being the third part of an inch.

BARM, or YEAST, the head, or working

BY THE "PORTABLE BAROMETER" THE PROFILE OF A CHAIN OF MOUNTAINS MAY EASILY BE TAKEN, WITH A GREAT DEGREE OF CORRECTNESS.

out of beer, which is used as a ferment to lighten bread.

BAR'NACLES, a species of shell-fish which sticks to the bottom of ships, rocks, &c.——In farriery, an instrument composed of two branches joined at one end with a hinge, to put upon a horse's nose, to confine him for shoeing, bleeding, or dressing.

BAR'NACLE-GOOSE, a large water-fowl with a broad flat bill.

BAR'OLITE, a stone of the ponderous order, called also the carbonate of barytes. It usually occurs in small masses, which have a fibrous structure; and it is generally of a light yellowish gray colour.

BAROM'ETER, an instrument for measuring the weight of the atmosphere, and of use in ascertaining and anticipating the changes of the weather. For this purpose, the tube is fixed to a graduated scale, so that the smallest variation in the column is visible. In dry weather, the air being free from vapours, is consequently heavy, and presses up the quicksilver; but in moist rainy weather, the atmosphere being charged with clouds and fogs, the air is lighter, and presses with less force on the quicksilver. From the best observations that have been made on the barometer, it appears, however, that it is not so much the height of the mercury in the tube that indicates the weather, as the motion of it up and down; wherefore, in order to know whether the mercury is actually rising or falling, the following rules are of use: 1, If the surface of the mercury is convex, it is a sign that the mercury is then rising; 2, If the surface is concave, it is sinking; 3, If the surface is plain, or rather a little convex, the mercury is stationary; 4, If the glass is small, shake the tube, and if the air is grown heavier, the mercury will rise about half the tenth of an inch; if it is growing lighter, it will sink as much.

BAR'ON, a degree of nobility next below a viscount, and above a baronet. Originally, the barons being the feudatories of princes, were the proprietors of land held by honourable service: hence, in ancient records, the word *barons* comprehends all the nobility. It is probable that formerly all those were barons who had lordships with courts-baron, and soon after the Conquest, all such sat in the house of peers; but they being very numerous, it was ordered that none should sit but such as the king thought fit to call up by writ, which ran *pro hac vice tantum*. This state of nobility being very precarious, they at length obtained of the king letters patent, and these were called barons by patent, or creation.——BARONS OF THE EXCHEQUER, the four judges to whom the administration of justice is committed, in causes between the king and his subjects, relating to matters concerning the revenue. They were formerly barons of the realm, but of late are generally persons learned in the laws.

BARON AND FEMME, a term in law for husband and wife, who are deemed but one person; so that a wife cannot be witness for or against her husband; nor he for or against his wife, except in cases of high treason.

BAR'ONET, the lowest degree of honour that is hereditary, being the next below a baron, and above a knight. The order was founded by King James I. at the suggestion of Sir Robert Cotton, when 200 baronets were created at once: to which number it was intended that they should be always restrained: but it is now enlarged at the royal pleasure, without limitation. On their institution, they were allowed to charge their coat with the arms of Ulster, in Ireland, which province they were to defend against the rebels, who then harassed it extremely: to which end they were each to raise and keep up 30 soldiers at their own expense for three years together, or to pay into the exchequer a sum sufficient to do it; which, at 8*d*. per day per head, was £1095: so that including fees, the expence of this dignity may be about £1200 sterling. The baronetcies of Scotland, or of Nova Scotia in America, and of Ireland, were instituted with similar views to the advantage of the state.

BAR'RACAN, a kind of thick, strong stuff, something like camlet, but of a coarser grain. It is used to make cloaks, surtouts, and other outer garments.

BAR'RACKS, large buildings erected for the security and accommodation of soldiers, whether infantry or cavalry.

BARRACU'DA, a species of fish of the pike kind, found in the West Indian seas. It is about ten feet long, and very voracious.

BAR'RATOR, in law, a common mover, or maintainer of suits and quarrels, either in courts or elsewhere; an encourager of litigation.

BARRICA'DE, or BARRICA'DO, a fortification made in haste, of trees, earth, palisades, wagons, or any thing that will obstruct the progress of an enemy, or serve for defence or security against his attack.

BAR'RISTER, a counsellor learned in the law, admitted to plead at the bar, and there to take upon him the protection and defence of clients. They are termed *juris consulti*; in some countries *licentiate jure*; and anciently, barristers were called *apprentices* of the law: in Latin, *apprenticiis juris nobiliores*. In Scotland, they are called *advocates*. An *inner* barrister is one who is a serjeant, or king's counsel, and is admitted to plead within the bar: an *outer* barrister is one who pleads without the bar; but at the Rolls, and other inferior courts, all barristers are admitted within the bar.

BAR'ROW, a large hillock or mound of earth. They are met with in many parts of the world, and on being opened, are found to be repositories of the dead. When these mounds are composed of stones, they are usually distinguished by the name of *cairns*. By the Romans they were called *tumuli*, and are still to be seen in many parts of Great Britain and Ireland, as well as in several other countries.

BAR'RY, in heraldry, is when an escutcheon is divided bar-wise, that is, across from side to side, into an even number of

THE DUTIES OF A COUNSEL ARE HONORARY, AND HE CAN MAINTAIN NO ACTION FOR HIS FEES, WHICH ARE CONSIDERED AS A GRATUITY.

partitions, consisting of two or more tinctures interchangeably disposed.

BAR'-SHOT, double-headed shot, consisting of a bar with a half ball or round head at each end; used for destroying the masts and rigging in naval combat.

BAR'TER, the exchanging of one commodity for another, the trucking of wares for wares, among merchants. Barter was the original and natural way of commerce, there being no buying till money was invented.——Also the rule in Arithmetic by which the proportionate value of commodities is found.

BARY'TA, or BARY'TES, in mineralogy, a very ponderous kind of earth, very brittle, and perfectly soluble in boiling sulphuric acid. It is compounded of oxygen and barium.

BARYSTRON'TIANITE, a mineral called also *Stromnite*, from Stromness, in Orkney. It is of a yellowish white colour externally, but of a greyish white within.

BARYTO-CAL'CITE, in mineralogy, a mixture of carbonate of lime with sulphate of barytes, of various forms and of a grey colour.

BAR'YTONE, in music, a male voice, the compass of which partakes of the common base and the tenor, being lower than the one and higher than the other.

BASALT'ES, or BASALT', a stone supposed to be of volcanic origin, black or green in colour, and found in pillars in the prismatic form. Columns of basalt form the Giant's Causeway, the Isle of Staffa, and Fingal's Cave, and are always found near great volcanoes, as Hecla, &c. It is remarkably hard and heavy, will not strike fire with steel, and is a fine touch-stone.

BASALT'INE, in mineralogy, a variety of common hornblende, often found in basalt and volcanic scoriæ.

BAS'ANITE, in mineralogy, Lydian stone, or black jasper; a variety of siliceous or flinty slate; of a bluish black colour, interspersed with veins of quartz. It is employed to test the purity of gold.

BASE, in geometry, the lowest side of the perimeter of a figure: thus, the base of a triangle may be said of any of its sides, but more properly of the lowest, or that which is parallel to the horizon.——Base, in architecture, is used for any body which bears another, but particularly for the lower part of a column and pedestal. The base of columns is differently formed in different orders: thus, the Tuscan base consists only of a single torus, besides the plinth: the Doric has an astagral more than the Tuscan: the Ionic has a large torus over two slender scotias, separated by two astragals: the Corinthian has two toruses, two scotias, and two astragals: the Composite has an astragal less than the Corinthian: the Attic base has two toruses and a scotia, and is proper for either the Ionic or Composite columns.——Base, in fortification, the exterior side of the polygon, or that imaginary line which is drawn from the flanked angle of a bastion, to the angle opposite to it.——Base, in chemistry, a term used to denote the earth, the alkali, or the metal of which a salt is formed in union with oxygen: thus, in the oxyde of iron or copper, the iron or copper is the base.——Base, in botany, that part on which the whole flower stands, and the fruit too when the flower has faded.——Base Line, in perspective, the common section of a picture, and the geometrical plane.——Base Tenure, in law, the holding by villeinage or other customary services, as distinguished from the higher tenures *in capite*, or by military service.——Base Fee is to hold in fee at the will of the lord, as distinguished from soccage tenure.——Base Court, any court not of record.

BASHAW', Pasha', or Pacha', a dignity under the Turkish government. *Bashaw*, used absolutely, denotes the prime vizier; other bashaws, which are generally governors of provinces or cities, being distinguished by the name of the place under their command. The appellation is given by way of courtesy to almost every person of any figure at the Grand Signior's court. Their degrees of dignity were marked by their bearing one, two, or three horses' tails.

BAS'IL, in botany, an aromatic plant of the genus *Ocymum*, of which there are many species, all natives of warm climates. The sweet basil is much used by the French in cookery.——*Basil*, in carpentry, the slope or angle of a chisel, plane, or other tool.

BASIL'ICÆ, anciently, public halls or courts of judicature, where princes and magistrates sat to administer justice. They were at first the palaces of princes, but were finally converted into churches. Hence *basilic* now means a church, chapel, cathedral, or royal palace.

BASIL'ICA, or BAS'ILIC, in anatomy, the interior branch of the axillary vein, running the whole length of the arm.

BASIL'ICI, a denomination given in the Greek empire to those who carried the emperor's orders and commands.

BASIL'ICON, in medicine, an ointment consisting of resin, oil, wax, &c.; a sovereign kind of plaster. The word is also used as an epithet for many compositions.

BA'SIS, in medicine, the principal ingredient in a composition.——Basis cordis, in anatomy, the superior part of the heart, to distinguish it from its apex or small point.——Basis cerebri, the lower and posterior part of the brain.

BASIL'ICUS, in astronomy, *Cor Leonis*, a fixed star of the first magnitude in the constellation Leo.

BASILID'IANS, in church history, a branch of gnostics, who maintained that Christ's body was only a phantom, and that Simon the Cyrenean suffered in his stead.

BAS'ILISK, a fabulous kind of serpent, called a cockatrice, said to be produced from a cock's egg, hatched by a serpent, and supposed to kill by its breath or sight only.——A harmless species of lizard, with piercing eyes, and a white spot on its head, of remarkable brilliancy.——A large piece of ordnance.

BA'SIN, a hollow vessel for holding li-

FEW COUNTRIES IN THE WORLD PRESENT SUCH MAGNIFICENT "BASALTIC ROCKS" AS THE NORTH OF IRELAND, AND SOME OF THE HEBRIDES.

ARTIFICIAL SULPHATE OF "BARYTES," A BEAUTIFUL WHITE COLOUR, IS FORMED BY ADDING SULPHURIC ACID TO THE CARBONATE OF BARYTES.

quids.——In hydraulics, any reservoir of water.——*Basin of a dock*, a place where the water is confined by double flood-gates. The *basin of a haven* is that part which opens from a narrow passage into a spacious receptacle.——In Jewish antiquities, the *laver* of the tabernacle.

BAS'SO, in music, the Italian for *bass*. Thus, *Basso concertante*, is the bass of the little chorus: *basso repieno*, the bass of the grand chorus; and *basso continuo*, that part of a composition which is set for the organ, &c.

BASK'ING-SHARK, a species of *squalus* or shark, from three to twelve yards in length. It is also called the *sun-fish*, from its lying on the surface of the water, and basking in the sun. It produces a great quantity of oil.

BASK'ET FISH, a species of sea-star, or star-fish, of the genus *asterias*, having five rays issuing from an angular body, and dividing into innumerable branches.

BASS (sometimes written *base*, which is the correct English word for *basso*, low): the lowest or fundamental part in music, and important as the foundation of harmony.——*Thorough bass* is that which includes the fundamental rules of composition. *Ground bass* is that which commences with some subject of its own, that is continually repeated throughout the movement, whilst the upper parts pursue a separate air. *Counter bass* is a second or double bass, where there are several in the same concert.——BASS, among gardeners, a soft kind of sedge or rush used in binding plants, &c.

BASS VIOL, a stringed musical instrument of the same shape as a violin, but much larger.

BAS'SETING, the rising of a vein of coal or other stratum, towards the surface of the earth.

BASSOON', a musical wind instrument, consisting of a very long tube, with a reed for the mouthpiece.

BAS'SO RELIE'VO, or BASS RELIEF, sculpture in which the figures are represented as projecting not far above the plane on which they are formed. Figures cut are said to be done in *relief*, and when the work is low or flat it is called *bass relief*, or *basso relievo*, in distinction from *alto relievo* and *mezzo relievo*.

BASTI'LE, a noted fortress in Paris, which was used as a state prison, and in which many persons who had incurred the resentment of the French monarchs, or their ministers, had been immured for life. It was built at the latter part of the 14th century; and was demolished by the enraged populace at the commencement of the revolution in 1789.

BASTINA'DO, a mode of punishment used among the Turks, of beating the offender on the soles of the feet.

BAS'TION, in modern fortification, a huge mass of earth, usually faced with sods, but sometimes with brick, and, in a few instances, with stone, standing out from a rampart, whereof it is a principal part, and what in ancient fortification, was called a *bulwark*. The bastion consists of two *faces*, and an opening towards the centre called the *gorge*. Bastions are solid or hollow. A *flat* bastion is made in the middle of the curtain, when it is too long to be defended by the bastions in its extremes. A *demi* bastion is composed of one face only, with one flank and a demi-gorge. A *double* bastion is one raised on the plane of another.

BAT, in zoology, the *Vespertilio* of Linnæus, an animal resembling both a bird and a mouse. It has wings, not of feathers but of a skin distended, and flies only by night, and has an unknown power of distinguishing distant objects without light. It lays no eggs, but brings forth its young alive, and suckles them. They feed upon moths, flies, flesh, and oily substances, and are torpid during the winter. The species are numerous, and among them is the *vampire* or *Ternate bat* of Africa and the Oriental isles: their wings when extended measure five or six feet; they live on fruits, but they are said to suck the blood of persons when asleep.

BATH, a sufficient quantity of water collected in some convenient receptacle, for persons to plunge or wash their bodies in, either for health or pleasure. They are distinguished into *natural* and *artificial*, and natural again into *warm* and *cold*. Natural warm baths are formed of the water of hot springs, of which there are many in different parts of the world; especially in countries where there are, or evidently have been, volcanoes. The artificial warm baths consist of either water or some other fluid heated by art. The cold bath consists of water, either fresh or salt, in its natural degree of heat; or it may be made colder by art, as by a mixture of nitre, sal-ammoniac, &c. The chief natural warm baths in Great Britain are those of Bath and Bristol, in Somersetshire; and those of Buxton and Matlock in Derbyshire; which latter are merely *tepid*. Some are impregnated with iron, and called *chalybeate*; others with sulphur, carbonic acid, and other mineral qualities. They are often very efficacious in scorbutic, bilious, and dyspeptic complaints, as well as for the removal of various chronic diseases. The word *bath* also signifies any artificial contrivance which is to supply the place of a bath, as a *shower bath*, or an apparatus for applying water to the body in the form of a shower; a *vapour bath*, or a mode of conveying moisture to the body by means of steam. Among the ancients, the most magnificent edifices were erected for bathing in; such were the baths of Titus, Paulus Emilius, and Dioclesian, whose ruins are still remaining. At the present day, baths are in general use in the East.

BATH, (KNIGHTS OF THE), a military order of knighthood in England, supposed to have been instituted by Richard II., who limited the number of knights to four: but his successor, Henry IV., on the day of his coronation increased them to forty-six. This order received its denomi-

DURING THE DAY-TIME, "BATS" REMAIN SUSPENDED BY THEIR HOOKED HINDER CLAWS, IN THE LOFTS OF BARNS, OR IN TREES.

IT IS CUSTOMARY FOR RUSSIANS, AFTER ENJOYING A "STEAM BATH," TO PLUNGE INTO A RIVER, OR ROLL THEMSELVES IN THE SNOW.

EACH BATTALION IN THE BRITISH ARMY CONSISTS OF FOUR DIVISIONS, WHICH ARE SUBDIVIDED, AND FORMED INTO SECTIONS.

nation from a custom of bathing before the knights received the golden spur. The badge or symbol of the order is a sceptre, rose, thistle, and three imperial crowns conjoined within a circle, upon which is the motto, "Tria juncta in uno," alluding to the three cardinal virtues—faith, hope, and charity. The order of the bath, after remaining many years extinct, was revived under George I., by a solemn creation of a great number of knights.

BAT'ON, the staff or truncheon given as a symbol of authority to field-marshals.

BATOON', in architecture, a moulding in the base of a column.

BATRACHUS, in ichthyology, the sea-devil, a froglike fish.——In medicine, an inflammatory tumour under the tongue.

BATRA'CIAN, an epithet designating an order of animals, including frogs, toads, &c.

BATTA, allowances made to troops in India. *Dry batta* is money given in lieu of rations; *wet batta* what is given in kind.

BATTA'LIA, an army drawn up in order of battle.

BATTALION, a body of foot soldiers, consisting of from 600 to 1000 men.

BATTEL, an ancient mode of trial by single combat, which was introduced into England by William the Conqueror. The contest was had before the judges, on a piece of ground enclosed, and the combatants were bound to fight until the stars appeared, unless the death of one party or victory sooner decided the contest. It is but of late years that this barbarous law has been abolished.——An account of the expenses, for provisions and liquor, of a student at Oxford.

BATTEN, a scantling or piece of wooden stuff, from two to four inches broad, and one inch thick.

BATTERING-RAM, a military machine, with which the ancients effected breaches in fortifications. These engines were variously constructed and of different sizes; but in general the battering-ram consisted of a vast beam suspended to a frame, and armed at one end with a head of iron, resembling that of a ram; from the butting of which animal the idea was doubtless derived. This being equally balanced, and furnished with a number of ropes, at the extremity opposite to the ram's head, a great number of men threw it forward with violence, and thus, by a repetition of the strokes, demolished the wall against which it was directed.

BATTERY, in the military art, a parapet thrown up to cover the gunners and men employed about the guns from the enemy's shot. This parapet is cut into embrasures for the cannon to fire through. A *battery of mortars* is sunk in the ground, and has no embrasures. *Cross-batteries* are two batteries which play athwart one another upon the same object, thus forming an angle, and beating with great effect, because, what one ball shakes, the other beats down. *Battery d'enfilade*, is one that scours or sweeps the whole length of a straight line. *Battery en echarpe*, is that which plays obliquely. *Battery de revers*, that which plays on the enemy's back. *Camerade battery*, is when several guns play at the same time upon one place.——Battery, in electricity, is a combination of coated surfaces of glass, commonly jars, so connected together that they may be charged at once, and discharged by a common conductor.——Galvanic Battery, or Pile, an apparatus employed for accumulating the electricity of galvanism, which is produced by the mutual agencies of certain metallic and carbonaceous substances, and peculiar fluids. It was invented by the celebrated Volta, and is often called the *Voltaic* battery.——Battery, in law, the striking, beating, or offering any violence to another person, for which damages may be recovered. It is distinguished from an *assault*, inasmuch as the latter does not necessarily imply a hitting or blow. There may be an assault without battery, but battery always implies an assault.

BATTLE-AXE, a kind of halberd, first introduced into England by the Danes, and much used in the early part of the middle ages.

BATTLEMENTS, in architecture, are indentures or notches in the top of a wall, or other building, in the form of embrasures.

BATTOLOGY, in grammar, a superfluous repetition of some words or things.

BAY, in geography, an arm of the sea, extending into the land, and terminating in a nook. It is larger than a creek, and less than a gulf. It is also often applied to large tracts of water, as the *bay* of Biscay.——Bay, one of the colours of a horse, of which there are various shades.——Bay, or Bay Tree, the female laurel tree, an evergreen which grows wild in Italy and France.——Bays, in the plural, an honorary garland or crown, bestowed as a prize for victory or excellence, anciently made of laurel branches.

BAY-SALT, a salt which crystallizes or receives its consistence from the heat of the sun or action of the air.

BAYONET, a short pointed instrument or triangular dagger, made to fix on the muzzle of a firelock or musket.

BAZAR', or BAZAAR', a kind of exchange or market-place among the Turks and Persians. Some of these buildings are remarkable, not only for their extent, but for their magnificence.——This name has of late years been in use with us to denote certain large buildings containing a collection of shops or stalls, let to different persons, and in which a great variety of "fancy goods" are exposed for sale.

BDELLIUM, a gummy resinous juice, produced by a tree in the East Indies, of which we have no satisfactory account. It is brought into Europe from the East Indies, and from Arabia. As a medicine, in which quality it is brought to market, it is better in its simple state, than when formed into any preparation. It is one of the weakest of the deobstruent gums, has a fragrant odour, and a pungent flavour.

EACH REGIMENT IN NAPOLEON'S ARMY HAD A BATTALION OF "VOLTIGEURS," THE PRUSSIANS HAVE ONE ALSO, CALLED "FUSILIERE."

BEA'CON, a signal erected on a long pole, upon an eminence, consisting of a pitch-barrel or other combustible matter, to be fired at night, to notify the approach of an enemy. Also, any object serving as an occasional signal, or as a constant sea-mark, by means of which ships may be warned of danger, or assured of their port.

BEAD, in architecture, a round moulding, commonly made upon the edge of a piece of stuff, in the Corinthian and Roman orders, cut or carved in short embossments, like beads in necklaces.——Bead, in metallurgy, the small ball or mass of pure metal separated from the scoria, and seen distinct while in the fire.——*Bead-proof*, a term among distillers for that proof of the strength of spirituous liquors denoted by the bubbles called *beads*, which rise and remain on the surface of the liquid for some time after it has been shaken.

BEAD'-TREE, in botany, a shrub growing in Spain and Portugal; so called, because the nut which it bears is bored through, and strung as beads by the Roman catholics of those countries. It is the *Melia* of Linnæus.——A *beadsman* is one who recites beads or prayers for his patron, &c.

BEAK, in a general sense, the upper end or point, as the upper part of the bill of a bird.——Beak-head, in a ship, a small platform at the fore-part of the upper deck.——Beaked, in heraldry, an epithet in blazoning for birds whose beaks are of a different tincture from the bodies. And in botany, an epithet for the fruit when it is terminated by a process in the shape of a bird's beak.

BEAK'ER, a drinking cup; so called from its having a spout like a bird's beak.

BEA'DLE, a messenger, or apparitor of a court, who cites persons to appear, and answer in the court what is alleged against them.——A Beadle is also an officer at an university, whose chief business it is to walk before the masters with a mace, at all public processions, &c.

BEA'GLE, the name of a particular kind of hound or hunting-dog, of which there are several sorts.

BEAM, the largest piece of timber in a building, laid across the walls, and which serves to support the principal rafters. In ships, beams are the large main timbers that stretch across a ship to support a deck.——The part of a balance, from the ends of which the scales are suspended.——Beam, among hunters, the main stem of a deer's head, or that part which bears the antlers, royals, and tops.——Beam-ends. A vessel is said to be on her beam ends, when she inclines so much on one side that her beams approach a vertical position.——Beam-compass, an instrument consisting of a square wooden or brass beam, having sliding sockets, used for describing large circles.—Before the Beam, is an arch of the horizon between a line that crosses the ship at right angles, and that point of the compass which she steers.

BEAM'-TREE, a species of wild service. This tree grows to the height of thirty or forty feet, and is particularly fitted for making axle-trees and the like.

BEAR, a wild quadruped, of the genus *ursus*. Its limbs are large and heavy, the head large, terminating in a prolonged snout, the body covered with shaggy hair, and having hooked claws for climbing trees. It feeds on honey, insects, and carcasses, and lies torpid during the winter. There are ten species, three of which are well known. 1. The Brown bear, which subsists chiefly on fruit, vegetables, and honey. 2. The American bear, which is smaller than the other, and feeds in like manner. 3. The Polar or maritime bear, which is only found in high northern latitudes: it is from eight to twelve feet long; of great strength and ferocity, devouring fish, seals, and whales at sea; and on land, any animals which it can seize.——Bear, in astronomy, a name given to two constellations called the greater and the lesser bear, or *ursa major* and *ursa minor*.

BEARD'ED, *(barbatus)* in botany, having parallel hairs or tufts; in opposition to Beardless *(imberbis)* without parallel hairs or tufts; epithets applied to the corollas of certain plants.

BEAR'ER, in architecture, a post or brick wall between the ends of a piece of timber, to support it.——In heraldry, a figure in an achievement, placed by the side of the shield, and seeming to support it.

BEAR'ING, in navigation and geography, the situation of one place from another, with regard to the points of the compass, or the angle which a line, drawn through two places, makes with the meridian of each.——Also a sea term in several phrases; thus, when a ship sails towards the shore, before the wind, she is said to *bear in with the land* or harbour. To let the ship sail more before the wind, is to *bear up*. To put her right before the wind, is to *bear round*. A ship that keeps off from the land, is said to *bear off*. When a ship that was to windward comes under another ship's stern, and so gives her the wind, she is said to *bear under her lee*, &c.——In heraldry, bearings are the coats of arms or figures of armouries, by which the nobility and gentry are distinguished from common persons.

BEAT. In military phraseology, "to beat" has various significations, expressive of giving a signal by *beat of drum*. "To beat an *alarm*," to give notice of danger. "To beat a *charge*," a signal for charging the enemy. "To beat the *general*," to give notice to the troops to march. "To beat the *reveille*," to give notice for leaving quarters. "To beat the *tat-too*," to give notice for retiring to quarters, as at bed-time. "To beat the *troop*," a signal for repairing to their colours. "To beat to *arms*," to give a signal for the troops to arm themselves. "To beat a *parley*," a signal for a cessation of hostilities, to hold a conference with the enemy.

BEATIFICATION, an act of the Pope, by which he declares a person beatified or

THE ASIATIC, OR LONG-LIPPED BEAR, IS A NATIVE OF INDIA, AND FEEDS ON ANTS, RICE, HONEY, AND THE FRUIT OF THE PALM-TREE.

THE POLAR BEAR WALKS FIRMLY ON ICE, BECAUSE THE SOLES OF HIS FEET ARE ALMOST ENTIRELY CLOTHED WITH LONG HAIR.

THE COMMON, BUT RIDICULOUS PRACTICE, OF MAKING A NOISE WITH KETTLES AND PANS WHEN BEES ARE SWARMING, IS UTTERLY USELESS.

BEETLES AND SPIDERS, THOUGH VORACIOUS, ARE CAPABLE OF REMAINING IN TOTAL ABSTINENCE FOR MONTHS, OR EVEN FOR YEARS.

blessed after death, and is the first step towards canonization, or the raising of one to the dignity of a saint; but no person can be beatified till fifty years after his death.

BEAT'INGS, in music, the regular pulsative swellings of sound, produced in an organ by pipes of the same key, when not in unison, and their vibrations not simultaneous or coincident.

BEAT'ING TIME, in music, that motion of the hand or foot by which some person marks and regulates the movements of the performers.

BEAU'TY, a general term for whatever excites in us pleasing sensations or causes our admiration. Or it may be defined to be an assemblage of graces or properties which please the eye and interest the mind. The proportion and symmetry of parts, the regularity and symmetry of features, the expression of the eye, and the complexion, are among the principal properties which constitute *personal* beauty. This kind is said to be *intrinsic*, and immediately perceptible; but when reflection is requisite to comprehend the utility of an object, it is said to be *relative:* for instance, the beauty of a machine is not perceived till we understand its uses and adaptation to its purpose. Thus, an object may please the understanding without interesting the sense; and on the other hand, we perceive agreeable sensations, excited by some objects, whose ideas are not related to anything that is praiseworthy.——Beauty, in architecture, painting, and other arts, is the harmony and justness of the whole composition taken together.

BE'AVER, an amphibious quadruped that lives on the banks of rivers and unfrequented lakes, and is remarkable for its ingenuity in building its habitation. It has short ears, a blunt nose, small forefeet, large hind feet, and a flat ovate tail. It walks slowly, swims dexterously, eats sitting on its haunches, and conveys its food to its mouth with its fore paws. This animal is valued both for its fur and for the oil which it yields.——Beaver, that part of the helmet which defends the sight, and opens in front.

BEAU MONDE, a French term, implying the gay fashionable world.

BED, an article of furniture for stretching and composing the body on, for rest, or sleep, consisting generally of feathers inclosed in a case of tick. The ancient Romans had various sorts of beds, for various purposes; they had their chamber-bed, whereon they slept; their table-bed, whereon they eat, in a recumbent posture; there being usually three persons to one bed, whereof the middle place, as well as the middle bed, was accounted the most honourable: they had also the bed whereon they studied, and that whereon the dead were carried to the funeral pile.——Bed, a plat or level piece of ground in a garden, raised a little above the level of the adjoining ground.——A hollow place in which any thing rests: as, the *bed* of a mortar.——A stratum, or extended mass of any thing, whether upon the earth or within it; as, a *bed* of sulphur, a *bed* of sand, &c.—— The *bed* of a *river* is the bottom of a channel in which the stream or current usually flows.——*From bed and board*, in law, a separation of man and wife without being divorced, the wife having a suitable maintenance, called alimony, allotted to her out of the husband's estate.

BEE, an insect of the genus *apis*, of which there are numerous species, but the most interesting and useful to man is the honey-bee: it is justly celebrated for its singular instincts, and highly prized for the valuable products of its industry. The honey-bees live in swarms or societies of from 10,000 to 40,000, and contain three sorts of individuals; the female, or, as she is commonly called, the *queen* bee; the males, or drones; and the *neuters*, or working bees; though by some naturalists these latter are call imperfect females. A hive usually consists of one mother, or queen, from six to eight hundred males, and from 15 to 20,000 working bees. The office of the queen bee is to propagate the species; that of the neuters to collect the honey, form the cells, and feed the young. They are furnished with a proboscis by which they suck the honey from flowers; this they swallow, and when it has undergone a peculiar process in the stomach, they disgorge it into the cells. The pollen of flowers settles on the hairs with which their body is covered, whence it is collected into pellets, by a brush on their second pair of legs, and deposited in a hollow in the third pair. It is called *bee-bread*, and is the food of the larvæ or young. The females and neuters have a barbed sting, attached to a bag of poison, which flows into the wound inflicted by the sting. The season of fecundation occurs about the beginning of summer. It is said that the female, in the spring, lays as many as 12,000 eggs in the lapse of twenty-four days. When a hive is overstocked, a new colony is sent out under the direction of a queen bee; this is called *swarming;* and three or four swarms sometimes leave a hive in one season.

BEER, a drink made of malt and hops by the process of brewing; it is of three kinds, namely, strong beer, ale, and table beer, or small beer.

BEE'TLE, or Scarabæus, a genus of insects furnished with shelly wing-cases, and of which there are several species, all perfectly harmless, but differing greatly in size. The largest sort is the elephant beetle, found in South America, which is four inches long.

BE'HEMOTH, an animal mentioned in the book of Job, which some naturalists suppose to be the same as the river-horse.

BEL'LIS, in botany, the Daisy, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua:*

BEI'ZA, in Hebrew antiquity, a word signifying an egg, was a certain measure in use among the Jews. The beiza was likewise a gold coin of the Persians, who asserted that Philip of Macedon owed their

THE GREAT BELL OF MOSCOW, CAST IN 1653, IS SAID BY MR. CLARKE, TO BE COMPUTED TO WEIGH 443,772 POUNDS.

king Darius a thousand beizas or golden eggs for tribute money; but Alexander the Great refused to pay them, saying that the bird which laid these eggs had flown into the other world.

BELEM'NITE, in mineralogy, a kind of stone resembling an arrow in shape, and vulgarly called thunder-stone: a genus of fossil shells, common in chalk and lime-stone.

BELL, a hollow body of metal, ranked by musicians among the musical instruments of percussion. The constituent parts of a bell are the body or barrel, the clapper on the inside, and the ear or cannon by which it hangs to a large beam of wood. The matter of which it is usually made is a composition called bell-metal, which consists of three parts of copper and one of tin. The sound of a bell consists in a vibratory motion of its parts, much like that of a musical chord; and as the external surface of the bell undergoes alternate changes of figure, it gives that tremulous motion to the air, in which the sound consists. ——Bells are of high antiquity. The blue tunic of the Jewish high priest was adorned with golden bells; and the kings of Persia are said to have the hem of their robe adorned with them. They were introduced into English churches about the year 700, and used to be baptized before they were hung. The number of changes may be found by multiplying the digits in the number into one another; thus four bells will give 24 changes, and six bells 720, and ten changes may be rung in a minute.——*To bear the bell*, is to be the first, or leader, in allusion to the bell-wether of a flock, or the leading horse of a team that wears bells on his collar. Or may it not be synonymous with *to bear away the bell?* which is thus explained: Race-courses were formerly called bell-courses, the prize given being a silver bell: therefore, to win the race was "to bear away the bell."——In naval language the word *bells* is used to denote half hours of the watch, which are marked by striking the bell at the end of each.

BELLOC'ULUS, in mineralogy, a precious stone resembling the eye, and formerly on that account supposed to be useful in diseases of that organ.

BELLONA'RII, in Roman antiquity, the priests of Bellona, who, in honour of that goddess, used to make incisions in their body; and after having gathered the blood in the palm of their hand, give it to those who were partakers of their mysteries.

BELLES-LETTRES, or POLITE LITERATURE, in its most obvious sense, is that description of literature which has a peculiar reference to matters of taste: but according to many writers, the term has a much more extensive signification, and is made to comprehend not merely every elegant acquirement, but nearly every branch of knowledge.

BELLO'NIA, in botany, a genus of the *pentandria monogynia* class of plants, whose flower, consisting of a single petal, is of the rotated kind; the fruit is a capsule of a turbinato-oval figure, surrounded by the cup, and containing only one cell, in which are numerous very small roundish seeds.

BEL'LOWS, an instrument or machine for blowing fire, so contrived as to exhale and inhale air by turns, by enlarging and contracting its capacity. It serves also for organs and other pneumatic instruments, to give them a proper supply of air. The air which enters the bellows is compressed when they are closed, and flows with a velocity proportioned to the force by which it is compressed.——Bellows of very great power are generally called *blowing machines*. One of the largest known is erected at the smithy in the royal dockyard at Woolwich: it is adequate to the supply of air for forty forge fires, amongst which are several for the forging of anchors, &c.

BEL-META'LO DI VOCE, in music, an Italian expression for a clear and brilliant toned *soprano* voice.

BEL'OMANCY, a kind of divination practised by the ancient Scythians, Arabians, &c. A number of arrows, being marked, were put into a bag or quiver, and drawn out at random; and the marks or words on the arrows drawn, determined what was to happen.

BELTS, or FASCIÆ, in astronomy, two zones or girdles round the planet Jupiter, more lucid than the other parts of his body, and terminated by parallel straight lines, sometimes broader, and sometimes narrower, varying both in magnitude and position.

BELL'EVUE *(French)*, a name given in France to small country-seats, or to arched bowers at the end of a garden or park, intended for the enjoyment of fresh air in the shade.

BEL'LUÆ, the sixth order of the animals of the class *mammalia*, with cutting teeth in both jaws, feet hoofed, and living on vegetables; including the genera of the horse, hippopotamus, and swine.

BELU'GA, a large fish of the cetaceous order, found in the arctic seas, and measuring from twelve to eighteen feet in length. In swimming, this fish bends its tail under its body like a lobster, and thrusts itself along with the rapidity of an arrow.

BEL'VEDERE, *(Ital.)* a name given in Italy to the cupolas on palaces or large houses, which are ascended for the enjoyment of a fine prospect and the advantage of a pure air. This is the name also of a part of the Vatican, where the famous statue of Apollo is placed, and which, on this account, is called the *Apollo Belvedere*.

BENCH, in law, a seat of justice, as the Queen's Bench at Westminster. Also, the persons sitting on a bench, as a bench of magistrates.

BENCH'ER, a lawyer of the oldest standing in the inns of court.

BEND, in heraldry, one of the ten honourable ordinaries, drawn from the dexter or right corner, at the top of the escutcheon,

THE GREAT BELL OF ST. PAUL'S, LONDON, WEIGHS 8400 POUNDS; GREAT TOM OF CHRIST'S-CHURCH, OXFORD, WEIGHS 17,000 POUNDS.

to the sinister base, or left corner, at the bottom. It is supposed to represent a shoulder belt, or scarf, and to show the bearer to be valiant in war. It is sometimes called a *bend-dexter*, to distinguish it from the *bend-sinister*, which is drawn from the left side of the shield to the right.—— BENDS *of a ship* are the strongest and thickest planks in her sides, and are rekoned from the water, first, second, or third bend. They have the beams, knees, and foot-hooks bolted to them, and are the chief strength of the ship's sides.

BEND'ING, in seamanship, the tying of two ropes or cables together: thus they say bend the *cable*, that is, make it fast to the ring of the anchor; bend the *sail*, make it fast to the yard.

BEND'LET, in heraldry, a little bend which occupies a sixth part of a shield.

BENEDIC'TINES, a celebrated order of monks, who profess to follow the rules of St. Benedict. They wear a loose black gown with large white sleeves, and a cowl on the head, ending in a point. They are the same that are called *Black-friars*.

BE'NE PLA'CITO, in music, an Italian term, denoting that the performer is to exercise his own taste.

BEN'EFICE, an ecclesiastical living, particularly a rectory and a vicarage. Bishoprics, deaneries, and prebendaries are usually styled *dignities*.

BENEFIT OF CLERGY, a privilege, originating in a superstitious regard for the church, whereby the clergy were either partially or wholly exempted from the jurisdiction of the lay tribunals. It extended in England only to the case of felony; and though it was intended to apply only to clerical felons or clerks, yet as every one who could read was, by the laws of England, considered to be a clerk, when the rudiments of learning came to be diffused almost every person became entitled to this privilege. A variety of provisions and exceptions were from time to time enacted; till at length by the statue of 7 and 8 Geo. IV., c. 28, it was decreed that "benefit of clergy, with respect to persons convicted of felony, shall be abolished."

BEN'ZOIN, or BEN'JAMIN, a dry solid vegetable substance, or resin, of a fragrant smell, produced by an incision from the *styrax*, an Indian tree. It is brought to us from the East Indies, particularly from Siam and the islands of Java and Sumatra, in masses of various sizes, composed of small granules of a whitish or yellowish colour, with a purple cast on the surface. It is very inflammable, and diffuses a fragrant smell while burning, or when rubbed in the hand. When the benzoin tree is six years old, the natives cut it in several places in an oblique direction, and the benzoin flows out in the form of a balsamic juice, having a pungent taste and an agreeable odour. Benzoin was formerly very much esteemed as an expectorant; and is still often employed in medicine. A cosmetic is also prepared from it, which is much used in France, under the name of *lait virginal*; and the gum is a principal ingredient of court-plaster.

BER'BERIS, or BARBARY-TREE, in botany, is a shrub rising to eight or ten feet high, well known as an ornamental shrub in our gardens. The leaves have a grateful acid taste, the flowers at a distance yield a pleasant smell, but very near they are rather offensive. The berries are so very acid that the birds seldom touch them; they are used in this country as pickles and preserves. The roots of the shrub boiled in lye give a fine yellow, which is used in Poland for dying leather; the bark, with the aid of alum, is used for the same purpose.

BERGAMOT', or BERGAMOTTE, in chemistry, a fragrant essence, extracted from a fruit which is produced by grafting a branch of a citron tree upon the stock of a bergamot pear. This essence is obtained by cutting the external rind of the fruit into small pieces, and squeezing them into a glass vessel, in the same manner as the juice of a lemon is squeezed out, by which means an etherial oil is produced of a very fragrant smell.

BER'LIN, a kind of chariot, supposed to have its name from the Prussian capital, where it was first made.

BERME, in fortification, a space of ground left between the rampart and the moat or foss, designed to receive the ruins of the rampart, and prevent the earth from filling the foss.

BER'NARDINES, an order of monks, founded by Robert, abbot of Moleme, and reformed by St. Bernard. They wear a white robe with a black scapulary, and when they officiate they are clad in a large white gown, with great sleeves, and a hood of the same colour.

BER'RY, the popular term for a succulent pulpy fruit, containing several seeds or granules, as the gooseberry, &c.

BERTH, any situation or place where a vessel lies, either at anchor or in a wharf. ——An apartment in a ship where a number of officers or men mess or reside.—— Also, the box or place for sleeping at the sides of a cabin; or the place for a hammock.

BER'YL, in mineralogy, a pellucid gem of a light green colour, found in the East Indies, Brazil, Peru, Siberia, &c. Beryl is considered by Cleaveland as a subspecies of emerald. It is crystallized in six-sided prisms, which are perfect or truncated on the edges and angles. It is nearly as hard as the topaz, and can scarcely be melted without the addition of some other substance. With borax, it melts easily. It becomes electrical by rubbing, and is found in primitive rocks, accompanied with quartz, felspar, garnet, mica, and topaz.——A beautiful sea-green colour for the use of artists, is also prepared under this name.

BER'YL-CRYSTAL, a species of imperfect crystal, of a very pure, clear, and equal texture. Its colour is a fine transparent pale brown.

BESTIA'RII, an appellation given by the Romans to such as engaged with wild beasts

THE STRAWBERRY IS NOT A TRUE BERRY, ITS SEEDS BEING PLACED ON THE FRUIT, INSTEAD OF BEING IMMERSED IN THE PULP.

THE ORANGE AND LEMON ARE BERRIES, AS MUCH AS GOOSEBERRIES AND CURRANTS ARE, THEIR SEEDS LYING NAKED IN THE PULP.

at their public games; whether they fought by compulsion, as criminals, or, as gladiators, made a trade of it.

BE'TA, the second letter in the Greek alphabet.

BE'TEL, or BETEL-NUT, a species of pepper plant, the leaf of which is universally chewed by the southern Asiatics, to sweeten the breath and strengthen the stomach. It is a slender-stemmed climbing plant. In India there is an almost incredible consumption of the betel-nut. It is taken by the natives after meals; during a visit it is offered to friends when they meet and when they part; and, in short, nothing appears to be done without betel. To correct the bitterness of the leaves, a little *areca* is wrapped in them with the *chunam*, which is a kind of burnt lime made of shells.

BET'ONY, or BETON'ICA, in botany, a genus of the *didynamia gymnospermia* class of plants, whose flower, consisting of a single labiated petal, is of a bright red colour, and disposed in short spikes. It is reckoned vulnerary, aperient, and diuretic.

BET'ULA, the BIRCH-TREE. The trees of this genus, most commonly known, are the *birch* and the *alder*. The birch is applied to an infinity of uses. A wine is drawn, by tapping, from the trunk, by the natives of Canada; and, in Europe, wine is made from the fruit of the alder. The birch, though the worst of timber, is manufactured into vessels of various domestic uses. Broom makers are constant customers for the twigs, and hoop benders for the larger branches; and for the trunks, the turners and manufacturers of instruments of husbandry have a constant demand. It is also used in certain processes of dyeing, and for tanning leather.

BEV'EL, an instrument to mark particular angles on wood or stone; much used by joiners and masons.——In architecture, any angle that is not a right angle or square, or is more or less than 90 degrees, is termed a bevel; but if it has an angle of 45 degrees, it is called a *mitre*.

BEY, among the Turks, signifies a governor of a country or town. The Turks write it *begh*, or *beg*, but pronounce it *bey*. The word is particularly applied to a lord of a banner, whom they call sangiac-beg or bey. Every province in Turkey is divided into seven sangiacs, or banners, each of which qualifies a bey, and these are all commanded by the governor of the province, whom they also call begler-beg, that is, lord of all the beys of the province.

BEZ'ANT, a round flat piece of pure gold, without any impression, supposed to have been the current coin of Byzantium.

BEZO'AR, a medicinal stone, brought from the East and West Indies, which was formerly reckoned a sovereign antidote against poisons. It is found to be a calculus, or morbid concretion, contained in the stomachs of certain animals, and consists, for the most part, of bile and resin. The great value of the bezoar at one time gave birth to many imitations of it; nor can it be wondered at, when we read of its being eagerly bought for ten times its weight in gold. Hence, other medicines, supposed to possess similar virtues, obtained the name of *bezoardics*.——BEZOAR is also the name of some medicinal preparations, as the BEZOAR ANIMALE, made of calcined hartshorn and vitriol; and BEZOAR MINERALE, a preparation of antimony, made by adding nitrous acid to antimony.——BEZOAR'DIC ACID, a name given to the acid extracted from the urinary calculi formed in the kidneys or gall-bladder.——The word *bezoartic* is also used in various medical compositions.

BI'BLE, (THE BOOK,) a name given by way of eminence to the Sacred Writings. The Old Testament consists of the five books called the Pentateuch; the Historical, Poetical, and Prophetic books: the New Testament, of the four Gospels, the Acts, and the Epistles. The earliest version of the Bible is a Greek translation called the Septuagint, and from this other translations have been made. It was first printed in English in 1535. The present authorized version of the Holy Scriptures was completed in the reign of James the First, about the year 1603.

BIBLIOG'RAPHY, the knowledge of books as to their several editions, time of being printed, and other information tending to illustrate the history of literature.

BIBLIOM'ANCY, a kind of divination, performed by means of the Bible, by selecting passages of Scripture at hazard, and drawing from them indications concerning future events.

BIBLIOTHE'CA, in its original and proper sense, denotes a library, or place for depositing books. In matters of literature, it means a treatise giving an account of all the writers on a certain subject; thus, we have bibliothecas of theology, law, philosophy, &c. There are likewise universal bibliothecas, which treat indifferently of books of all kinds.

BICAP'SULAR, in botany, having two capsules containing seeds, to each flower.

BICE, a blue colour, prepared from the *Lapis Armenius*. Bice bears the best body of all the bright blues used in common work, as house-painting, &c. but it is the palest in colour. It works tolerably well; but inclines a little to sandy, and therefore requires good grinding. Next to ultra-marine, which is too dear for general use, it is the best of all the blues.

BICIP'ITAL, or BICIP'ITOUS, in anatomy, denotes that a muscle has two heads or origins; and such muscle is denominated *biceps*.

BIEN'NIALS, in botany, plants that flourish for two years and then perish; their root and leaves being formed the first year, and their fruit the second.

BIFA'RIOUS, in botany, denotes that the leaves grow only on opposite sides of a branch.

BIFI'DATE, in botany, an epithet for opening with a cleft.

BIG'AMY, double marriage, or the marrying of two wives or two husbands while

CHEWING THE "BETEL-NUT" REDDENS THE SALIVA AND TURNS THE TEETH BLACK, BUT IT CREATES AN APPETITE.

"FOSSIL BEZOAR" IS A FIGURED STONE, OF A PURPLE COLOUR, ABOUT THE SIZE OF A WALNUT; IT IS CALLED SICILIAN EARTH.

the first is alive, which is felony by statute.

BIGA'RIUS, in antiquity, the charioteer of a *biga*, or two-wheeled chariot. Money or medals stamped with this emblem were called *biga'ti*.

BIGEMI'NATE, in botany, twin-forked; used of a decompound leaf having a forked petiole, with several leaflets at the end of each division.

BIG'OT, a person who is obstinately and unreasonably wedded to a particular religious creed, practice, or opinion; or one who is illiberally attached to any opinion or system of belief.

BIL'ANDER, a small merchant vessel with two masts, rigged in a peculiar manner, but now rarely used.

BILAT'ERAL, in a general sense, denotes something with two sides. Hence, bilateral cognation is kinship both by the father's and mother's side.

BIL'BOES, a punishment at sea answering to the stocks on land. The offender is laid in irons, or stocks, which are more or less ponderous, according to the quality of the offence of which he is guilty.

BILE, a yellowish green fluid secreted by the liver, accumulated in the gall-bladder, and thence conveyed through a canal into the duodenum, where it converts the chyme into chyle and excrement. The bile is properly of two kinds, and is distinguished under them by the names of *cystic* and *hepatic*. The hepatic bile is thin, almost insipid, and scarcely coloured; the cystic bile is thicker, more coloured, and very bitter. The use of the bile is to attenuate the chyle, to mix the oleaginous parts of the blood with the aqueous, to stimulate the intestines, and in part to change the acid of the chyle. All these effects the cystic bile produces in a greater, and the hepatic in a less degree.

BIJU'GOUS, in botany, yoked or coupled side by side; an epithet for a leaf.

BILA'BIATE, in botany, two-lipped; an epithet for the corolla and perianth.

BIL'IARY DUCTS, in anatomy, small canals which convey the bile out of the liver into the hepatic duct, which is formed of these canals, into one trunk.

BILL, in trade, both wholesale and retail, as also among workmen, signifies an account of merchandize or goods delivered to a person, or of work done for one.——Bill, in law and commerce, an obligation or security given for money under the hand of the debtor, without a condition or forfeiture for non-payment. This is also called a note of hand.——A *bill of exchange* is an order drawn on a person, in a distant place, requesting or directing him to pay money to some person assigned by the drawer, or to his order, in consideration of value received. The person who draws the bill is called the *drawer*; the person to whom the request or demand is made, is called the *drawee*; and the person to whom the money is directed to be paid, is called the *payee*. Such a bill is frequently called a *draught*; but *bill of exchange* is the more legal, as well as more mercantile, expression.——A *bill of entry* is a written account of goods entered at the custom house, whether imported or intended for exportation.——A *bill of lading* is a written account of goods shipped by any person, on board of a vessel, signed by the master of the vessel, who acknowledges the receipt of the goods, and promises to deliver them safe at the place directed.——A *bill of parcels* is an account given by the seller to the buyer, of the several articles purchased, with the price of each.——A *bill of sale* is when a person borrows money and delivers goods to the lender as security, and at the same time gives him a bill, empowering him to sell the goods if the money is not repaid at the appointed time with interest.——A *bill in parliament*, is an instrument drawn up by any member, and presented to parliament for its approbation or rejection. Should it be passed into a law, it then becomes an *act* of parliament.

BIL'LIARDS, an interesting game, affording a very healthful exercise and an agreeable recreation. It is played on an oblong table, covered with green cloth, with ivory balls, which are struck or driven with sticks, called the mace and cue, so as to drive the antagonist's ball into holes, called hazard-nets or pockets, at the corners or by the sides of the table. The art of the game lies in pocketing your antagonist's ball without putting in your own.

BILLS OF MORTALITY, annual registers of the deaths and burials which take place in and near London. These bills were first commenced in 1592, during the period of a great pestilence, when they included 109 parishes. The number has since been greatly increased.

BI'NARY ARITHMETIC, that in which two figures or characters, viz. 1 and 0, only, are used: the cipher multiplying every thing by 2, as in the common arithmetic by ten: thus, 1 is one, 10 is 2, 11 is 3, 100 is 4, 101 is 5, 110 is 6, 111 is 7, 1000 is 8, 1001 is 9, 1010 is 10; being founded on the same principles as common arithmetic. This sort of arithmetic was invented by Leibnitz, who asserts that it is more expeditious than common arithmetic in discovering the properties of numbers, and in extensive tabular calculations.

BIN'NACLE, a wooden case, containing the compasses, log glasses, watch glasses, &c. on board a ship.

BIN'OCLE, or BINOC'ULAR TEL'ESCOPE, a kind of dioptric telescope fitted with two tubes joined in such a manner, that one may see a distant object with both eyes, at the same time.

BINO'MIAL, a term in algebra for any quantity consisting of two names, or terms, connected together by the sign +, or —. Thus $a + b$ and $8 - 3$ are binomials, consisting of the sums and differences of these quantities.

BIOG'RAPHY, the life of one or more individuals whose actions are deemed worthy of record. No species of history can be more entertaining or instructive than the

FOURCROY SUPPOSES THAT THE "BILE," AS SOON AS IT IS MIXED WITH THE CONTENTS OF THE INTESTINAL CANAL, BECOMES DECOMPOSED.

BY A "BILL OF RIGHTS" IS MEANT, A CONSTITUTIONAL CHARTER, GUARANTEEING CERTAIN RIGHTS AND PRIVILEGES TO THE PEOPLE.

lives of eminent men, who by their private virtues or public deeds, by the efforts of genius or the impulses of philanthrophy, excite our admiration, and afford examples for posterity to emulate.

BIO'TA, in zoology, a genus of sea-in sects, of a cylindric, but variable figure, with the tentacula arranged in a single series round the aperture of the mouth, at the extremity of the body. Among the several other species of this genus is the polype.

BIPAR'TITE, in botany, an epithet for the corolla, the leaf, and the perianth, when they are divided into two parts at the base.

BIPEN'NIS, in Roman antiquity, an axe with a double edge, one of which was used in stabbing, and the other in cutting.

BIQUAD'RATE, in algebra, an obsolete term for the square of the square; as, 16 is the biquadratic power of 2; for 2 + 2 is 4, and 4 × 4 is equal to 16.——BIQUADRATIC ROOT of a number, is the square root of its square root: thus the biquadratic root of 81 is 3; for the square root of 81 is 9, and the square root of 9 is 3.——BIQUADRATIC EQUATION, an equation where the unknown quantity of one of the terms has four dimensions.——BIQUADRATIC PARABOLA, in geometry, is a curve line of the third order, having two infinite legs tending the same way.

BIQUIN'TILE, in astronomy, an aspect of the planets, when they are distant from each other by *twice the fifth* part of a great circle, that is, 144 degrees.

BIRD'-BOLT, a small arrow with three heads, which was discharged at birds from a cross-bow. The bird-bolt is still used as a bearing in coat armour.

BIRD-CATCHING, the art of taking birds or wild fowl by birdlime, nets, and decoys, which, as respects the more artful modes of catching birds, is called fowling.

BIRD'LIME, a glutinous substance, made of the bark of holly, which is spread on the twigs of trees to catch birds.

BIRDS'-NESTS, in cookery, the nest of the *hirundo esculenta* or Indian swallow, very delicately tasted, and frequently mixed among soups. On the sea-coasts of China, at certain seasons of the year, there are seen vast numbers of these birds: they leave the inland country at their breeding time, and come to build in the rocks, and fashion their nests out of a matter which they find on the shore, washed thither by the waves. The nests are of an hemispheric figure, of the size of a goose's egg, and in substance much resemble the ichthyocolla or isinglass. They are esteemed a great luxury, and sell at a high price.

BISH'OP, a prelate, or person consecrated for the spiritual government of a diocese. In Great Britain, bishops are nominated by the sovereign, who, upon request of the dean and chapter for leave to elect a bishop, sends a *conge d'elire*, or license to elect, with a letter missive, nominating the person whom he would have chosen. The election by the chapter must be made within twelve days, or the king has a right to appoint whom he pleases. The jurisdiction of a bishop of the church of England consists in collating benefices, granting institutions, commanding inductions, taking care of the profits of vacant benefices for the use of the successors, consecrating churches and chapels, ordaining priests and deacons, confirming after baptism, granting administrations, and taking probates of wills; these parts of his function depend upon the ecclesiastical law. A bishop is also a peer of the realm.

BISHOP'S COURT, an ecclesiastical court, held in the cathedral of each diocese, the judge whereof is the bishop's chancellor, who judges by the civil and canon law; and if the diocese be large, he has his commissaries in distant parts, who hold what they call consistory courts, for matters limited to them by their commission.

BISIL'IQUOUS, in botany, an epithet for plants contained in two distinct pods.

BIS'MUTH, one of the brittle metals, of a reddish or yellowish-white colour and a lamellated texture, and moderately hard and brittle: so that it not only breaks into pieces under the strokes of the hammer, but may even be beat into powder. Bismuth is more commonly found in a native state than any other semi-metal. Most metallic substances unite with bismuth, and are thereby rendered more fusible than before; hence it is used in making solder, printer's types, pewter, &c.

BIS'ON, or Wild Ox, a quadruped of the bovine genus. It has short, black horns, very wide at the base; and on the shoulders is a large hunch, consisting of a fleshy substance, which, with the head, is covered with a long undulated fleece, divided into locks. In winter, the whole body is covered in this manner; but in summer, the hind part of the body is naked. The tail is about a foot long, with a tuft of hairs at the end. The fore parts of the body are very thick and strong; but the hind parts are slender and weak. These animals inhabit the interior of North America, and some of the mountainous parts of Europe and Asia.

BISSEX'TILE, or LEAP-YEAR, a year consisting of 366 days, and happening every fourth year, by the addition of a day in the month of February, which that year consists of 29 days. And this is done to recover the six hours which the sun takes up nearly in his course, more than the 365 days commonly allowed for it in other years.

BIS'TRE, or BIS'TER, the burnt oil extracted from the soot of beech-wood, which is used as a brown pigment by painters.

BIS'TORT, or SNAKE-WEED, a species of Polygonum, the roots of which, when medicinally applied, are powerfully astringent and antiseptic.

BIS'TOURY, a small surgical knife, of various forms, according to the purpose for which it is intended.

BISULPHURET, in chemistry, a sulphuret with a double proportion of sulphur.

BIT, in carpentry, a boring instrument

BIRDS WHICH REGULARLY PAIR ARE CALLED "MONOGAMOUS," (MARRIED TO ONE); THOSE WHICH DO NOT, ARE CALLED "POLYGAMOUS."

IT IS SAID THAT HERDS OF TEN THOUSAND WILD "BISONS" ARE OFTEN SEEN ON THE MISSISSIPPI, EACH WITH ITS ARRANGED SENTINELS.

WORDS WRITTEN WITH A COLOURLESS SOLUTION OF NITRATE OF SILVER BECOME QUITE "BLACK," IF EXPOSED FOR A FEW MINUTES TO THE LIGHT.

BLANKETS AND FEATHERS ARE NON-CONDUCTORS OF ELECTRICITY; HENCE A BED IS A PLACE OF COMPARATIVE SAFETY IN A STORM.

so constructed as to be taken out of the handle.

BITT, a sea term for the two pieces of timber to which the anchor cables are attached.——The iron attached to the bridle, which is put into the horse's mouth.

BITTER, an epithet given to all bodies of a sharp, acrid, biting taste. Bitters are accounted stomachic and cleansing, and are said to resist putrefaction, correct acidities, and assist digestion.——*Artificial bitter*, is any bitter formed by the action of nitric acid on vegetable and other substances.

BITTERN, in ornithology, the English name of the *ardea stellaris:* it is about the size of the common heron.——BITTERN, in the salt-works, the brine remaining after the salt is concreted. It is used in the preparation of Epsom salt, the sulphate of magnesia, and of Glauber's salt, the sulphate of soda.

BITU'MEN, a combustible mineral, which is greasy to the touch, and when ignited emits a strong odour. When most fluid, it is called *naptha;* when viscid, *petroleum;* and when hard, *asphalt*. Coals are supposed to be of vegetable origin, and bitumen a compound of vegetable and animal substances.

BIVALVES, one of the three general classes of shell-fish, comprehending all those, the shells of which are composed of two pieces, joined together by a hinge.——BIVALVE is also an appellation given to such pods, or capsules, as consist of two valves inclosing the seeds.

BIV'OUAC, in military affairs, a night-guard, performed by the whole army, when there is any apprehension of danger from the enemy; or an encampment in the open air.

BIX'A, in botany, a genus of plants, class 13 *Polyandria*, order 1 *Monogynia*. From the red pulp which covers the seeds of the BIXA ORELLANA, *arnotto* is made.

BLACK, a well-known colour, supposed to be owing to the absence of light, most of the rays falling upon black substances being not reflected but absorbed.——There are several species of blacks used in painting; as *Frankfort black*, of which there are two sorts, one a natural earth inclining to blue; and the other made from the lees of wine burnt, washed, and ground with ivory, bones, &c.; *lamp black*, the smoke of resin, prepared by melting it in iron vessels; *ivory black*, made of burnt ivory, and used in miniatures; *Spanish black*, made of burnt cork, and first used by the Spaniards.

BLACK'-BOOK, a book kept in the exchequer of England, containing a description of that court, its offices, ranks, privileges, perquisites, and jurisdiction, with the revenues of the crown, in money, grain, and cattle. It is said to have been composed in 1175, by Gervais of Tilbury.

BLACK'-CAP, in ornithology, the *Motacilla atricapilla*, or mock-nightingale; so called from its black crown.

BLACK-LEAD, otherwise called *Plumbago* and *Graphite*, is a mineral substance used in the making of pencils, in forming a composition for crucibles, and in covering the surface of iron utensils to preserve them from rust and give them a good appearance. It has a dark iron-black colour, a metallic lustre, and a thin slaty fracture: it is found in separate loose pieces of a fine grain, which are very soft, and leave, as is well known, strongly-coloured traces on paper by friction. It is found chiefly in Cumberland, and forms a very valuable article of commerce.

BLACK'-MAIL, a certain rate of money, corn, or cattle, anciently paid, in the north of England, to certain persons connected with the moss-troopers, or robbers, to be by them protected from pillage.

BLACK'-THORN, a species of *prunes*, called also *sloe*. It is much used for hedges, its branches being armed with sharp, strong spines.

BLAD'DER, a thin membraneous bag in animals, serving as a receptacle of some juice, or of some liquid excrement, as the urinary bladder, gall bladder, &c.

BLANCH'ING, the art of making any thing white, as (in cookery) the blanching or peeling of almonds, or as (in horticulture) the method of whitening salads.——Blanching *money*, is the annealing, boiling, and cleansing it when it is coined. Blanching copper is done in various ways, so as to make it resemble silver. Blanching is also the operation of covering iron plates with a thin coat or crust of tin.

BLANCHIM'ETER, an instrument for measuring the bleaching power of chloride of lime, and potash.

BLANC-MANGER, (Fr. pron. *blo-monge*) a preparation of dissolved isinglass, milk, sugar, &c. boiled into a thick consistence, and garnished with blanched almonds.

BLANK, a void space in any writing or printing. The word is applied to various objects, usually in the sense of destitution, or emptiness.

BLANK-VERSE, in poetry, that which is composed of a certain number of syllables, without the assistance of rhyme.

BLAN'KET, a warm, woollen stuff, light and loose woven; chiefly used in bedding.——BLANKETS, a sea term, for combustibles made of coarse brown paper steeped in nitre, dried, and then steeped again in tallow, resin, and sulphur; they are used in fire ships.

BLAST, in its literal sense, signifies to wither by some pernicious influence; to prevent coming to maturity, or to affect with some sudden calamity. The figurative senses of the word are taken from the *blasting* of plants, and all express the idea of preventing maturity, destroying, or disappointing of the intended effect; as to blast credit or reputation, to blast some cherished design, &c.

BLAST'ING, among miners the splitting and tearing up of rocks by the force of gun powder.

BLAST'-FURNACE, a large conical or quadrangular building, used at iron works for smelting iron-stones and ores.

DURING THE LAST CENTURY IT WAS CUSTOMARY TO SEND WOVEN GOODS FROM ENGLAND TO HOLLAND TO BE "BLEACHED."

CLOTH IS PREPARED FOR "BLEACHING" BY KEEPING IT SOME HOURS IN WARM WATER, AND AFTERWARDS BOILING IT IN AN ALKALINE LEY.

BLAST'ING-BELLOWS, instruments used when greater heat is wanted than could be obtained by the common accession of the air. Sometimes they have a wheel turned by water or steam, and the shaft, being provided with projecting pieces, raises and lowers the upper sides of these enormous bellows which discharge their volumes of air into the furnace.

BLA'ZONRY, or BLA'ZONING, that branch of heraldry which consists in expressing in proper terms all that belongs to coats of arms. The word is from the German *blasen*, to blow, because the herald blew a trumpet, and called out the arms of a knight, when he entered the lists at a tournament.

BLEACH'ING, the process of whitening linen by exposure to the sun and air; or, as is now more commonly in use, by the application of chemical preparations; such, for instance, as oxymuriatic acid, or sulphuric acid combined with chloride of lime.

BLEIME, in the veterinary art, an inflammation arising from bruised blood between the horse's sole and the bone of the foot towards the heels.

BLENDE, the ore of zinc.

BLIGHT, a general name for various distempers incident to plants, corn, fruit-trees, &c.; the whole plant sometimes perishing by it, and sometimes only the leaves and blossoms, which will be scorched and shrivelled up, the rest remaining green and flourishing. The chief cause of blights seems to be a continued dry easterly wind for several days together, without the intervention of showers, or any morning dew, by which the circulation of the vegetable juices is stopped. Another cause of blights in the spring is sharp hoar frosts, which are often succeeded by hot sun-shine in the day-time: this is the most sudden and certain destroyer of fruits that is known. A third kind originates in *fungi*, which attack the leaves or stem of herbaceous and woody plants, and more particularly the most useful kinds of grain. These are variously known to farmers by the name of *red rust*, *red gum*, &c.

BLINDS, in the military art, a sort of defence made of oziers or branches interwoven, and laid across two rows of stakes, about the height of a man, and four or five feet asunder, used particularly at the heads of trenches, when they are extended in front towards the glacis; serving to shelter the workmen, and prevent their being overlooked by the enemy. The word *blinds* is, in fact, used to denote all preparations which are intended to intercept the view of the enemy; and they are of course variously constructed, according to the situation or means of providing them.

BLI'NDNESS, a total privation of sight, arising from an obstruction of the functions of the organs of sight, or from an entire deprivation of them. The causes of blindness are various, proceeding from cataracts, gutta serena, &c. There are also kinds of periodical blindness, as a defect of sight in some towards night, in others only in the day; the former of which is termed *nyctalopia*, the latter *hemeralopia*.

BLI'NDWORM, a small reptile, called also a *slow-worm*, from the smallness of its eyes and the slowness of its motion.

BLIS'TER, a pustule in the skin, filled with serum; in general, any swelling caused by the separation of the outer integument of any substance from that which is underneath.——In medicine, the plaster or application that raises a blister, mostly made of the cantharides, or Spanish flies.

BLOCK, a sea term for a pulley, or series of pulleys, mounted in a frame, or shell, which serves to facilitate the passage of the ropes. The *blocks* now used in the navy are made in Portsmouth by means of circular saws and other machinery, of most ingenious construction, by which the several operations from the rough timber to the perfect *block* are performed in the completest manner possible; the whole being worked by means of a steam engine. We have lately seen it asserted, with an air of authoritative veracity, that "the machinery for supplying the royal navy with blocks (which is characterised as 'one of the wonders of the world') is the *invention* of Mr. Brunel." We have no wish to detract from the *real* inventions of this gentleman, whose scientific acquirements are too numerous, and too important, for him to require the aid of borrowed plumage. But we feel ourselves bound to contradict the statement in express terms. Great, and even wonderful, as Mr. Brunel's *improvements* may have been, the merit of *inventing* the block machinery is due to the late Mr. Walter Taylor, of Woodmill, in the parish of South Stoneham, Hants, where his original manufactory of blocks and pumps for the navy for many years existed. And we observe that in an able local work, entitled "Sketches of Hampshire," lately published, the circumstance is thus noticed:—"To the ingenuity of that gentleman (Mr. Taylor) this country is lastingly indebted; for, when the government took into their own hands the manufacture of blocks, and erected the celebrated machinery in Portsmouth dock-yard for that purpose, they availed themselves most advantageously of Mr. Taylor's *prior inventions*. As the sole credit of the conception, as well as of the perfection of that machinery, is very generally, though erroneously, attributed to the fertile genius of Mr. Brunel, it is but just in this place to assert the claim of a late inhabitant of South Stoneham to his fair share of that meed of applause which is too often exclusively offered to the successful engineer who had the good fortune to perfect the design which Mr. Taylor commenced." The block-making machine, as it now exists at Portsmouth dock-yard, unites the action of sixteen different machines in one steam-engine—seven for the shell, and nine for the sheave. Ten men do the work of 110. It makes about 200 sorts and sizes of blocks; viz., 72 sizes of thick blocks, 48 of thin blocks, 10 of clue-line ditto, 20 sister blocks, 20 topsail ditto, 24

MR. BRUNEL RECEIVED, AS A FINAL REWARD FOR HIS BLOCK-MACHINERY, THE PROFITS OF ONE YEAR'S OPERATION, AMOUNTING TO ABOUT 20,000*l*.

fiddle ditto, 20 jack ditto; and of these various kinds, the machines make 1420 blocks per day! Yet when we add that every 74-gun ship requires about 1300 blocks, and there are 200 different sizes, varying from 4 to 24 inches in length, no one need be surprised at the importance which is attached to this beautiful machinery.

BLOCKA'DE, in military affairs, the blocking up a place, by posting troops at all the avenues leading to it, to keep supplies of men and provisions from getting into it; and by these means proposing to starve it out, without making any regular attacks.——To *raise a blockade*, is to force the troops that blockade to retire.

BLOOD, a red fluid circulating through the arteries, veins, and other vessels of animal bodies: serving for the support of life, and the nourishment of all their parts. It is found in the mammalia, in birds, in reptiles, and in fishes; but in the last two classes of animals the temperature of the blood is much lower than in the former, for which reason they are cold-blooded. In the human body the formation of blood depends principally upon the efficacy of the circulation, by which the vessels act upon their contained fluids. Hence in the most robust persons the blood is of a deep red colour, and is concreted almost the very moment it is left in a state of rest. But in weak persons, in whom the circulation is far less vigorous, all the parts are pale and languid, whilst the blood is thin and hardly capable of concretion. Yet, even in such persons, when with due exercise and proper remedies the circulation is augmented, the red colour and due cohesion of the blood return. All the blood takes its origin from the chyle, and deposits, by degrees, the nourishing particles requisite to the preservation and growth of the body. Its due circulation is, as it were, the principle and first condition of life; and such is the rapidity of the circulation, that if it flowed at an equal rate in a straight line, it would run through one hundred and fifty feet in the space of a minute.

BLOOD, in law, is regarded in descent of lands; for a person must be next and most worthy of blood in order to inherit his ancestor's estate.——A kinsman of the *whole blood* is one who descends from the same couple of ancestors; of the *half blood*, one who descends from either of them singly, by a second marriage.

BLOOD-HORSE, a breed of horses originally from the Arabian stock, the excellence of which consists in the compactness of his fibre, that adds to his strength without increasing his bulk.

BLOOD'HOUND, a hunting dog, of such exquisite scent, that he will follow the track of men as well as of animals. It is the *canis sagax* of Linnæus.

BLOOM, a mass of iron after having undergone the first hammering, called *blomary*.

BLOW'PIPE, in chemistry and mineralogy, a wind instrument or apparatus for the purpose of increasing the heat of a candle or lamp, in the same manner as a pair of bellows is employed for raising the temperature of a common fire or furnace. It is made of brass or white iron: and its most simple form is that of a tapering tube, about eight inches in length, and curved nearly at right angles, within two inches of its smaller extremity, which is as fine as a wire. The use of the blow-pipe, both to the artist for the purpose of enamelling, and of softening and soldering small pieces of metal; to the glass-blower in making thermometers and other glass instruments; to the chemist and mineralogist in the examination of substances; and, indeed, wherever it is required to subject a small body to a strong heat, is very important.

BLUB'BER, the fat of whales and other large sea animals, of which is made train oil.——Sea-Blubber, a name used for the *urtica marina*.

BLUE, one of the seven primitive colours into which they are divided when refracted through a glass prism. Blue, as a colour in painting, is distinguished into *ultramarine*, from the azure stone, called *lapis lazuli; Prussian blue*, a colour next to ultramarine for beauty; *blue ashes*, used in limning, fresco, and miniature; *blue verditer*, a blue somewhat inclining to a green; and *bice*, which is the palest of all the bright blues. Indyeing, the principal ingredients for giving a blue colour are *indigo* and *woad*.

BO'A CONSTRIC'TOR, the largest of the genus of serpents, twenty-five or thirty feet long, very ferocious, and so strong, that by twisting itself round the bodies of oxen and other animals, it breaks their bones and swallows them whole.

BO'A CANI'NA, a snake of South America, of a beautiful make, about four feet long: the head is large and resembles that of a dog; and the colour of the animal is an elegant green with white stripes.——There are many other of the *boa* genus, the greater part of which are also natives of South America.

BOARD, in politics, an office under the control of the executive government: thus we say the Board of Trade, the Board of Works, the Board of Admiralty, the Board of Ordnance, &c., the business of those departments being there conducted by officers specially appointed for the purpose.——The word *board* has also numerous significations in nautical language.

BOAT, a small open vessel, usually moved by oars, or rowing. The forms, and even the names of boats, are different, according to the various uses they are designed for, and the places where they are to be used.

BOAT'SWAIN, the officer who has the boats, sails, rigging, colours, anchors, and cables committed to his charge. It is particularly the duty of the boatswain to direct whatever relates to the rigging of a ship, after she is equipped from a royal dockyard. It is likewise his office to summon

THE "BLOWPIPE" CAN PRODUCE THE SAME EFFECT ON SMALL SUBSTANCES BY THE FLAME OF A CANDLE, AS FURNACES CAN ON LARGE ONES.

THE STEAM FROM BOILING WATER IS NEARLY TRANSPARENT, BUT IT CONDENSES AND APPEARS CLOUDY ON MEETING THE AIR.

HARD WATER BY "BOILING" IS FREED FROM ITS EARTHY SALTS AND SUBSTANCES, AND THEREBY BROUGHT NEARLY TO THE STATE OF SOFT.

the crew to their duty; to assist with his mates in the necessary business of the ship, and to relieve the watch when it expires.

BOD'Y, in physics, an extended solid substance, of itself utterly passive and inactive, indifferent either to motion or rest; but capable of any sort of motion, and of all figures and forms. It is a *hard* body when its parts do not easily yield to any stroke or percussion; a *soft* body when it yields to every stroke, and thereby undergoes a change; and an *elastic* body, that changes its form with every stroke, but recovers it again when the impelling force is removed.——BODY, with regard to animals, is used in opposition to soul, in which sense it makes the subject of anatomy, and is that part of the animal composed of bones, muscles, canals, juices, nerves, &c., which, if considered with regard to the various voluntary motions it is capable of performing, is an assemblage of an infinite number of levers, drawn by cords: if considered with regard to the motions of the fluids it contains, it is another assemblage of an infinity of tubes and hydraulic machines; and if considered with regard to the generation of those fluids, it is another infinite assemblage of chemical instruments and vessels, the principal apparatus whereof, in the whole body, is the brain.——In hydrostatics, BODY is distinguished into solid, fluid, dense, rare, specifically heavy, and light. A *solid* body is that whose particles are kept by a certain continuity which preserves them in the same form. A *fluid* body is that in which the particles are not so bound together as to preserve a constant cohesion. A *dense* body is that which within the same space contains a greater mass than another. A *rare* body is that which contains a less mass within the space than others. A body *specifically heavier* is that which with the same volume of matter contains a greater weight. A body *specifically lighter* is that which with the same volume of matter contains a less weight. ——In optics, a *luminous body* is that which diffuses a borrowed light. A *pellucid* or *diaphonous* body is that through which the rays of light easily pass. An *opaque* body intercepts the passage of the rays.—— BODY, in matters of literature, denotes much the same with system, being a collection of every thing belonging to a particular science or art, disposed in proper order: thus we say, a body of divinity, law, physic, &c.——BODY, in the art of war, a number of forces, horse and foot, united under one commander. The *main body* is that part of an army which occupies the centre between the two wings. The *reserve* is a select body of troops posted by a general out of the first line of action, to answer some especial purpose.

BODIES, REGULAR, the name of five solids, as the tetrahedron, or pyramid, with four triangular faces; the hexahedron, or cube, with six square faces; the octahedron, with eight faces; the dodecahedron, with twelve; and the icosahedron, with twenty faces.

BOIL'ING, or EBULLITION, the bubbling up of any fluid. The term is most commonly applied to that bubbling which happens by the application of caloric, though that which ensues on the mixture of an acid and alkali is sometimes also distinguished by the same name. Boiling, in general, is occasioned by the discharge of an elastic fluid through that which is said to boil; and the appearance is the same, whether it is common air, fixed air, or steam, that makes its way through the fluid. The boiling of water is occasioned by the lowermost particles being rarefied into vapour by reason of the vicinity of the bottom of the containing vessel to fire. In consequence of this, being greatly inferior in specific gravity to the surrounding fluid, they ascend with great velocity, and, agitating the body of water in their ascent, give it the tumultuous motion called boiling. Every liquid has a fixed point at which boiling commences, and this is called the *boiling point*. Thus water begins to boil at the temperature of 212°. After a liquid has begun to boil, it will not become hotter, for although a stronger heat makes all liquids boil more rapidly, yet it does not increase their temperature.

BOG, a quagmire covered with grass, but not solid enough to support the weight of the body; in which sense it differs only from marshes or fens, as a part from the whole.

BOLES, are viscid earths, less coherent and more friable than clay, more readily uniting with water, and more freely subsiding from it. They are soft and unctuous to the touch; adhere to the tongue, and by degrees melt in the mouth, impressing a slight sense of astringency. There are a great variety of these earths; and they are sometimes used medicinally.

BOLE'TUS, in botany, a genus of the *cryptogamia fungi* class of plants, growing horizontally, and porous underneath.—— BOLE'TIC ACID is an acid made from mushrooms.

BOL'LARDS, large posts set in the ground, on each side of a dock: on docking or undocking ships, large blocks are lashed to them; and through these blocks are reeved the transporting hawsers to be brought to the capstans.

BOLO'GNA STONE is a phosphoric stone, first found at Bologna in Italy. It is a gray soft sulphureous stone, about the size of a large walnut, which shines in the dark after calcination. It is the native sulphate of barytes.

BO'LSTER, a soft pillow for a broken limb.——In farriery, it is the name of those parts of a saddle which are raised upon the bows to receive the rider's thighs.—— *Bolster* is also a sea term, for a piece of timber cut and placed for the easement of the cable.

BOLT, among builders, a strong cylindrical iron or other metal pin, used as a fastening for doors and windows. They are generally distinguished into three kinds, viz., plate, round, and spring bolts.——In

ELEPHANTS' BONES HAVE BEEN FOUND IN DILUVIAL STRATA, IN NEARLY EVERY COUNTY OF ENGLAND AND WALES.

SO SCARCE AND DEAR WERE BOOKS BEFORE THE INVENTION OF PRINTING, THAT THEY WERE COMMONLY CHAINED TO THEIR PLACES IN LIBRARIES.

gunnery, there are prise-bolts, transom-bolts, traverse bolts, and bracket-bolts.—— In ships, bolts are used in the sides and decks, and have different names, as eye-bolts, ring-bolts, chain-bolts, &c.

BO'LT-HEAD, in chemistry, a long straight-necked glass vessel for distillations, which being fitted to the alembic or still, is called a *receiver*.

BO'LUS, a soft mass of any thing medicinal, made a little thicker than honey, and smaller in quantity, so that it may be swallowed like a pill.

BOMB, a large shell or ball of cast iron, round and hollow, with a vent to receive a fusee, which is made of wood, and filled with combustible materials of all kinds. This being done, and the fusee driven into the vent, the fusee is set on fire, and the bomb is thrown from a mortar, in such a direction as to fall into a fort, city, or enemy's camp, when it bursts with great violence, and often with terrible effect, blowing into pieces whatever may be in its way.—— Bomb chest, a chest filled with bombs, or gunpowder only, and placed under ground, in order to effect great destruction when it bursts.——Bomb-ketch, a small vessel, constructed for throwing bombs into a fortress from the sea.

BOMBASIN', a name given to two sorts of stuff; the one of silk, and the other crossed with fine worsted.

BOMBAST', in literary composition, an inflated style, by which, in attempting to raise a low or familiar subject beyond its rank, the writer seldom fails to be ridiculous.

BOM'BIC ACID, in chemistry, an acid liquor contained in a reservoir near the anus of the silkworm.

BOMBYL'IUS, an ancient drinking-cup, with a long narrow neck; and which derived its name from the bubbling noise it made in drinking.——In entomology, *bombylius* is the name of the humble-bee.

BOM'BYX, in entomology, the silk-worm.

BONA'SUS, or BONAS'SUS, the wild ox, with a long mane; a native of Asia and Africa. It much resembles the *bison*, which see.

BOND, a legal obligation to perform a certain condition under forfeiture.—— Bond, in carpentry, the binding of any two pieces together by tenoning, morticing, &c. In masonry, it is the disposition of stones or bricks in a building, so that they most aptly fit together.——*Bond-timbers* are the horizontal timbers bedded in stone or brick walls for strengthening the masonry.

BONDS'MAN, one bound or giving security for another.

BONE, a firm hard substance, of a dull whitish colour, composing some part of the frame of an animal body, and serving as a prop or support to it. The bones are covered with a thin, strong membrane, called the periosteum, which has very little sensibility in a sound state, but when inflamed is extremely sensible. Their cells and cavities are occupied by a fatty substance, called the marrow, or medulla. From the analysis of bones we learn that, although the proportion of ingredients varies in different animals, the general constituents of bone are as follows: 1. Gelatin, soluble by boiling rasped or bruised bones in water, and giving a fine clear jelly; 2. Oil or fat separable during the boiling, by rising to the top of the water, and when cold concreting into a suet; 3. Phosphate of lime, soluble in dilute nitrous, muriatic, or acetous acid, and precipitable thence by pure ammonia; 4. Some sulphate of lime; 5. A little carbonate of lime; and, 6. A membraneous or cartilaginous substance, retaining the form of the bone after every thing else has been extracted by water and an acid. Of these ingredients the phosphate of lime exists in far the greatest abundance, and it is this which gives them their solidity. Man has 246 bones. The head and face 63, the trunk 59, the arms 64, and the lower extremities 60. That part of anatomy which treats of the bones is called *osteo'logy*.

BONITO', a fish of the tunny kind, growing to the length of three feet, and found on the American coast, and in the tropical climates.

BON'NET, in fortification, a small work composed of two faces, usually raised before the saliant angle of the counterscarp.

BONZE, an Indian priest, who wears a chaplet of beads about his neck, and carries a staff, having a wooden bird at one end. The bonzes of China are the priests of the Fohists, or sects of Fohi; and it is one of their established tenets, that there are rewards allotted for the righteous, and punishments for the wicked, in the other world; and that there are various mansions, in which the souls of men will reside, according to their different degrees of merit. The number of bonzes in China is estimated at fifty thousand, and they are represented as idle, dissolute men.

BOO'BY, a fowl of the pelican genus.

BOOK, a literary composition, designed to communicate something which the author has invented, experienced, or collected, to the public, and thence to posterity; being printed, bound in a volume, and published for that purpose.——The five books of Moses are doubtless the oldest books now extant; and there are none in profane history extant anterior to Homer's poems. A great variety of materials were formerly used in making books: plates of lead and copper, the bark of trees, bricks, stone, and wood, were among the first materials employed to engrave such things upon, as men were desirous to transmit to posterity. Josephus speaks of two columns, the one of stone, the other of brick, on which the children of Seth wrote their inventions and astronomical discoveries: Porphyry makes mention of some pillars, preserved in Crete, on which the ceremonies practised by the Corybantes in their sacrifices, were recorded: Hesiod's works were originally written upon tables of lead, and deposited in the temple of the Muses, in Bœotia: the ten commandments, deliver-

ed to Moses, were written upon stone; and Solon's laws upon wooden planks. Tables of wood, box, and ivory, were common among the ancients: when of wood, they were frequently covered with wax, that people might write on them with more ease, or blot out what they had written. The leaves of the palm-tree were afterwards used instead of wooden planks, and the finest and thinnest part of the bark of such trees, as the lime, the ash, the maple, and the elm; from hence comes the word *liber*, which signifies the inner bark of the trees: and as these barks were rolled up, in order to be removed with greater ease, these rolls were called *volumen*, a volume; a name afterwards given to the like rolls of paper or parchment. With regard to the use of books, it is indisputable that they make one of the chief instruments of acquiring knowledge; they are the repositories of the law, and vehicles of learning of every kind; our religion itself is founded on books, and "without them, (says Bartholin) God is silent, justice dormant, physic at a stand, philosophy lame, letters dumb, and all things involved in Cimmerian darkness." Yet, with all the well-merited eulogies that have been bestowed on them, we cannot overlook the fact that many are frivolous, and some pernicious. It will therefore be well to bear in mind the opinion of the learned Selden, who says that the characteristics of a good book are solidity, perspicuity, and brevity.

BOOK'BINDING, a very ingenious art, by which printed sheets are folded, gathered, pressed, sewn together, shielded with mill boards, and covered with leather, which is lettered, and ornamented by the use of leaf gold and gilding tools.

BOOK'-KEEPING, the art of registering mercantile transactions for reference, statement and balance; all of which must be so clearly done, that the true state of every part, and of the whole, may be easily and distinctly known.

BOOM, a sea term, for a long pole to extend the bottoms of particular sails, as the *jib-boom*, and *studding-sail-boom*.——The *boom of a harbour* is a strong iron chain thrown across a harbour, to prevent the entrance of an enemy; and a *fire-boom* is a strong pole thrown out from a ship to prevent the approach of fire-ships, &c.

BOOR, a term applied to the uncivilized peasants of Russia and other countries.

BOO'TES, a northern constellation containing Arcturus, and 50 other stars. It is also known as Charles's Wain.

BORA'CIC ACID, in its native state, exists in several small lakes in Italy, and in certain hot springs, from whose waters it is deposited by natural evaporation. It is also obtained from the mineral called borax, which consists of this acid in conjunction with soda. The acid, when separated, appears in the form of a white, scaly, glittering salt, with hexahedral scales; soft and unctuous to the touch. Its taste is bitterish, with a slight degree of acidity. It is soluble in alcohol, which it causes to burn, when set on fire, with a green flame surrounded with a white one. Boracic acid was discovered by Sir Humphry Davy to be a compound of a peculiar base, which he called *boron*, and oxygen, in the proportion of 8 parts of the former to 16 of the latter. The most important combinations formed by boracic acid is that with soda, commonly called *borax*.

BO'RAX, a native salt found in a fluid form, suspended in certain waters, and discovered in them by its brackish and bitter taste; readily separable from them by evaporation, and appearing, on a nice solution and evaporation, in transparent crystals. It is chiefly found in Thibet, and is imported into England from India. Borax makes no effervescence either with acids or alkalies, and yields nothing by distillation but an insipid phlegm. Its use in soldering gold and other metals, is well known; also in metallurgy, as a flux, in the remelting the small masses of gold and silver that are the produce of assays; for by rubbing it over the vessels these are to be melted in, it fills up all their little cavities, and leaves not the least roughness on the surface, to detain any of the melted metal. It is used by the dyers to give a gloss to silks; and it is also in request both as a cosmetic and a medicine.

BO'RACITE, or Borate of Magnesia, in chemistry, magnesian earth combined with boracic acid. It is generally of a cubic form, and remarkable for its electrical properties when heated.

BOR'DURE, in heraldry, a cutting off from within the escutcheon all round it about 1-5th of the field, serving as a difference in a coat of arms, to distinguish families of the same name, or persons bearing the same coat.

BO'RING, in mineralogy, a kind of circular cutting, or a method of piercing the earth with scooping irons, which, when drawn out, bring with them samples of the different strata through which they have passed. By this means the veins of ore or coal may be discovered without opening a mine.——Boring for water has of late been very successfully practised. [See *Artesian Wells.*]

BORING MACHINE, in mechanics, an engine used for boring or perfecting the bores of cannon, cylinders for steam-engines, pipes, &c. It is a machine of great power and complexity.

BOR'OUGH. This word originally denoted a fortified city or town; but at present it is given to such town or village as sends burgesses or representatives to parliament. Boroughs are equally such whether they be incorporate or not; there being several boroughs that are not incorporated, and, on the contrary, several corporations that are not boroughs.——Borough English, is a customary descent of lands or tenements, in certain parts of England, by which they descend to the youngest instead of the eldest son; or if the owner leaves no son, to the youngest brother. The custom goes with the land, although there be a

VEGETABLE PATHOLOGY MAKES US ACQUAINTED WITH THE VARIOUS ALTERATIONS OR DISEASES BY WHICH PLANTS MAY BE AFFECTED.

devise at the common law to the contrary. The reason of this custom is, because the youngest is presumed in law to be the least able to provide for himself.

BOS, in zoology, the generic name in the Linnæan system for all animals of the ox tribe, as the bison, buffalo, common ox, musk ox, &c. The characters of this genus are, that the horns are hollow and turned forward, bent like crescents, and smooth on the surface: the fore teeth are eight in number, and there are no canine teeth.

BORSEL'LA, in mechanics, an instrument with which glass makers contract or extend their glasses at pleasure.

BOR'RELISTS, in church history, a sect of Christians in Holland, (so called from Borrel, their founder), who reject the use of the sacraments, public prayer, and all external worship; yet they lead a very austere life.

BORS'HOLDER, among the Anglo-Saxons, one of the lowest magistrates, whose authority extended only over one tithing consisting of ten families. Each tithing formed a little state of itself, and chose one of its most respectable members for its head, who was called a borsholder, a termed derived from two words signifying a "surety" and a "head."

BOS'SAGE, in architecture, a term used for any stone that has a projecture, and is laid rough in a building, to be afterwards carved into mouldings, capitals, coats of arms, &c.——*Bossage* is also the name for what is otherwise called *rustic work*, consisting of stones that seem to project beyond the level of the building, by reason of indentures or channels left in the joinings. These are chiefly in the corners of edifices, and are there called *rustic quoins*.

BOTANOMA'NCY, an ancient species of divination by means of plants, especially sage and fig leaves. Questions were written on leaves, which were then exposed to the wind, and as many of the letters as remained in their places were taken up, and being joined together, contained an answer to the question.

BOT'ANY, that branch of natural history, which treats of plants, their classes, subdivisions, genera, and species. Various systems, or plans of arrangement, have been from time to time proposed; but the sexual system of Linnæus is at present generally received. This naturalist has drawn a continued analogy between the vegetable economy and that of the animal; and has derived all his classes, orders, and genera, from the number, situation, and proportion of the parts of fructification.——We shall, however, first speak of the NATURAL orders into which plants are distinguished; viz. into *trees*, the stems of which send forth branches from the middle and top; *shrubs*, the stems of which send forth branches from the bottom; and *herbs*, which bear flowers and seeds, and then die; if they die at the end of one year they are called *annuals*, if at the end of two years *biennials*, if they last three or more years they are *perennials*. The parts of plants are distinguished generally into the root, the stem, the bud, the leaf, the inflorescence, and the fructification. The *root* is the part through which the plant derives nourishment from the earth. The *stem* is the prolongation of the plant above the soil, proceeding from the root. The *bud* is that part of the plant which contains the embryo of the leaves, flowers, &c., and serves as their hybernaculum, or winter receptacle. The *leaf* is the herbaceous production from the ascending stem; when the stalk and leaf are so intimately connected that they cannot be distinguished, this is called a frond, as in the palms and the algæ. The *inflorescence* is the mode of flowering, which differs very much in different plants. The various parts of a flower are arranged under distinct heads, consisting of the calyx or empalement; the blossom or corolla; stamens or chives; pistils or pointals; seed vessel or pericarp; the seeds, the nectary, and receptacle. The *calyx* is formed of one or more green or yellowish green leaves placed at a small distance from, or close to the blossom. There are different kinds of calyxes, as the perianthium or cup near the flower, in the rose:—the involucrum, remote from the flower, in umbelliferous plants, as is seen in the hemlock and carrot:—the catkin, or amentum, as in the willow or hazel:—the sheath, or spatha, in the snow-drop:—the husk, or gluma, in wheat, oats, and different kinds of grasses:—the veil, or calyptra, covering the fructification of some of the mosses, and resembling an extinguisher:—the curtain or volva, surrounding the stems, and attached to the pileus or cap, that spreading part which forms the top of several fungi, and covers the fructification, and which in the common mushroom covers the gills. The *blossom* is that beautifully coloured part of a flower, which principally attracts the attention. It is composed of one or more petals, or blossom leaves. When it is united in one, as in the polyanthus or auricula, it is termed a blossom of one petal, but if it be composed of many parts, it is then said to be a blossom of one, two, three, or many petals. The *stamens* are slender thread-like substances, generally placed within the blossom, and surrounding the *pistils*. They are composed of two parts, the filament or thread, and the anther or tip, but the latter is the essential part. A *pistil* consists of three divisions, the germen or seed-bud, the style or shaft, and the summit or stigma; but the second is often wanting. Some flowers have only one pistil: others have two, three, four, &c. or more than can easily be counted. The seed-vessel, in the newly opening flower, is called the germen; but when it enlarges it is termed the seed-vessel. Some plants have no appendage of the kind, and then the seeds are uncovered, as in the dead nettle; the cup, however, generally incloses and retains the seeds till they ripen: and in the tribe of grasses, this friendly office is generally performed by what was previously called the blossom. The part to which the seeds are affixed

PLANTS BECOME LANGUID IN SUNSHINE, BECAUSE OXYGEN, THE RESPIRABLE PART OF THE ATMOSPHERE, IS EVOLVED FROM THEIR LEAVES.

WHEN A TREE BEGINS TO DECAY IN THE CENTRAL PART OF THE WOOD, THE TOP BRANCHES ARE OBSERVED TO WITHER.

THE AGE OF A TREE IS KNOWN BY THE CIRCULAR LAYERS OR RINGS IN THE WOOD, ONE RING BEING FORMED EVERY YEAR.

within the seed-vessel, is termed the receptacle of the seeds. *Nectaries* are those parts in a flower which are designed to prepare a sweet nectareous liquor. The tube of the blossom, as in the honey-suckle, frequently answers the purpose; but in many other flowers, there is a peculiar organization for the purpose. The *receptacle* is the seat or base to which the various divisions of a flower are affixed. Thus, if you pull off the calyx, the blossoms, the stamens, the pistils, and the seeds or seed-vessels, the substance remaining on the top of the stalk is the receptacle.

It will be our business now to describe the ARTIFICIAL classification of plants, or *sexual system of Linnæus;* and difficult as it may be to give a clear view of it in such a summary as the limits of our work afford, it is our intention not to lose sight of its scientific character, while we attempt to render it more intelligible to those who have never made its study an object of their attention. Linnæus has laid it down as a fundamental law of botany, that the sexual parts of plants are most intimately related to the growth of the fruit, and that they are therefore of the greatest importance; in short, that no other system of classification could possibly introduce order into a branch of natural history, teeming, as this does, with almost endless diversities. He accordingly divided all known plants into twenty-four classes, distinguishing them according to the number or situation of the stamens, filaments, anthers, or male and female flowers in each plant, as follows:—

1. *Monandria*, plants having one stamen.
2. *Diandria* . . . . . two stamens.
3. *Triandria* . . . . . three stamens.
4. *Tetrandria* . . . . . four stamens.
5. *Pentandria* . . . . . five stamens.
6. *Hexandria* . . . . . six stamens.
7. *Heptandria* . . . . . seven stamens.
8. *Octandria* . . . . . eight stamens.
9. *Enneandria* . . . . . nine stamens.
10. *Decandria* . . . . . ten stamens.
11. *Dodecandria*, from eleven to seventeen stamens.
12. *Icosandria*, many stamens inserted in the calyx. [wards.
13. *Polyandria*, twenty stamens and up-
14. *Didynamia*, four stamens in one flower, two longer than the rest.
15. *Tetradynamia*, six stamens, two shorter than the rest.
16. *Monodelphia*, the filaments connected in the form of a tube. [tubes.
17. *Diadelphia*, the filaments forming two
18. *Polyadelphia*, the filaments forming several parcels. [tube.
19. *Syngenesia*, the anthers formed into a
20. *Gynandria*, the stamens standing in the style.
21. *Monœcia*, stamens and pistils in separate flowers, but in one plant. [plants.
22. *Diœcia*, stamens and pistils in separate
23. *Polygamia*, stamens and pistils separate in some flowers, and united in others.
24. *Cryptogamia*, flowers inconspicuous, or invisible to the naked eye.

In this last class are comprehended the ferns *(filices)*; mosses *(musci)*; sea-weeds *(algæ)*; and the different kinds of *fungi*.

The *Orders*, or subdivisions of the classes, from class 1 to 13 inclusive, are marked by the number of styles or pistils in each plant; as *monogynia*, where there is but one pistil; and *digynia, trigynia, tetragynia*, &c. for two, three, four, or more pistils. When the seeds are naked, the term *gymnospermia* denotes the order: when contained in a pericarp, *angiospermia;* when the seeds are contained in a silique of different sizes, they are termed *siliculosa* and *siliquosa*. In most of the other classes the orders are marked by the number of stamens in each plant, except *syngenesia*, in which the orders *polygamia æqualis, polygamia superflua, polygamia frustanea, polygamia necessaria*, and *polygamia segregata* mark the connexion of the flower. The next division is into *Genera* or families, each genus uniting together all those plants which bear so strong an affinity as to be considered members of the same family. The name given to the genus is the name by which all the plants of that family are known: thus, the genus *rosa* includes all the different kinds of roses; *salix* (which is the scientific name for willow), every kind of willow; *convolvulus*, every kind of bind-weed; and *erica*, all the heaths. The distinctive or characteristic marks upon which the genera are founded, are always taken from the shape, position, number, or some other property of the different parts of the flower, as the calyx, petals, seeds, seed-vessels, &c., whether they be round or heart-shaped; whole or divided; rough or smooth; single or many: and the like. There is only one more division, viz. the *Species*. Each genus is divided into species, the characteristic marks of which are formed upon the leaves, stems, roots, or any other parts of the plant except the flower; and some name, called the specific or trivial name, is given to each species, thus characterized, which, added to the name of the genus, sufficiently distinguishes each particular plant. To elucidate this we will quote the words of a botanical essayist—"Suppose that you have found, and brought home from your walk, a delicate, blue, bell-shaped flower, called by some bell-flower, by others Canterbury-bell, and by others again blue-bell. You naturally wish to know by what name this plant is distinguished by the botanist, what name all scientific men in every country have agreed to give it, that you may be at no loss under what name to look for a description of it, or how to communicate to others any observations you may have made upon this plant yourself. In the first place, then, examine how many stamina, or how many of those small bodies called its antheræ, are to be found in the bell-shaped corolla, or blossom; you discover five; now run over the classes of Linnæus, till you come to that, which is distinguished by its five stamina: this is called *pentandria*, and you therefore know your flower to be in this class. Next look for the pistillum or

pistilla, of which, in this plant, you will find only one; this characterises the first order, called *monogynia*, and therefore your plant is in the class *pentandria*, and order *monogynia*. You have now done with the stamina and pistilla, and must attend to the other parts of the flower, comparing them, as you go on, with the characters of all the genera in this first order of the fifth class. The calyx you find to have five divisions, sharp, and not quite upright; the corolla of one petal, bell-shaped, with five clefts, close at the base; shrivelling; segments, broad, sharp, open; seed-vessels roundish, of three or four cells; all which tallies exactly with the generic character of *campanula;* this therefore is the genus, and you have now only to find out to what species yours belongs. The leaves nearest to the roots, and which are generally so close to the ground as to require care not to leave them behind in gathering the plant, you will find to be round, or rather heart-shaped, or sometimes kidney-shaped, whilst the leaves on the stem are narrow and strap-shaped; this determines the species, and in this your flower agrees with the character of that called *rotundifolia*. You have therefore now determined your plant to be the *campanula rotundifolia*, and you may read all the descriptions of this plant without a doubt as to its being the same, and may describe to others, where you found it, when you found it, and what else you know of it, without any fear of confounding it with any other blue, bell-shaped flower, of which there are many, both of this and other genera."

BOTAR'GO, a kind of sausage, made of the roes of the mullet, much used on the Mediterranean coast as an incentive to drink.

BOTRYOLITE, in mineralogy, is a variety of siliceous borate of lime, and occurs in botryoidal concretions in a bed of magnetic iron in gneiss, near Arundel, in Norway. Its colours are gray, reddish white, and pale rose-red: and form concentric stripes.

BOTRYOI'DAL, having the form of a bunch of grapes; as a mineral, presenting an aggregation of small globes.

BOTS, a species of small worms found in the intestines of horses, and are the *larvæ* of a kind of gad-fly, which deposits its eggs on the tips of the hairs, generally of the fore-legs and mane, whence they are taken into the mouth and swallowed.

BOTTOM, in navigation, is used to denote as well the channel of rivers and harbours, as the body or hull of a ship; thus, in the former sense, we say, a gravelly bottom, clayey bottom, sandy bottom, &c., and in the latter a British bottom, a Dutch bottom, &c. Goods imported in foreign *bottoms* pay a higher duty than those imported in our own. Hence, a state of hazard, chance, or risk; thus we say, do not venture too much in *one bottom;* meaning, do not hazard too much at a single risk.

BOTTOMRY, in commerce, the act of borrowing money upon the keel or bottom of a ship; that is, the ship itself is pledged as security for the repayment of the money. If the ship is lost, the lender loses the money: but if the ship arrives safe, he is to receive the money lent, with the interest or premium stipulated, although it may exceed the legal rate of interest.

BOULTINE, in architecture, a convex moulding, placed next below the plinth in the Tuscan and Doric capital.

BOUND, a sea-term, expressive of being confined to a particular spot or direction; as *wind-bound, ice-bound*, &c., confined by the wind or ice to a place from which you were sailing.

BOURGEOIS', a small kind of printing type, between longprimer and brevier. The type used in this work is four sizes smaller than *bourgeois*.

BOUTS-RIMES (Fr., pron. *boo-re-ma*), a term for certain rhymes disposed in order, and given to a poet, together with a subject, to be filled up with verses ending in the same word and same order.

BOW, an instrument of war and hunting, made of wood, or other elastic material, which, after being bent by means of a string fastened to its two ends, throws out an arrow with great force and velocity. The bow is still used as a weapon of offence by many of the inhabitants of Asia, Africa, and America; and in Europe, before the invention of fire-arms, a part of the infantry was armed with bows, which were made of the yew-tree or ash, and were of the height of the archer. For several centuries the long-bow was the favourite national weapon in England, and many laws were made to encourage the use of it; the parliament under Henry VIII. complained of the disuse of long bows, "heretofore the safeguard and defence of this kingdom, and the dread and terror of its enemies." The *cross-bow*, or arbalist, was a common weapon with the Italians, and was introduced into England in the 13th century: the arrows shot from it were called *quarrels*. Of the power of the bow, and the distance to which it will carry, many remarkable anecdotes are related. Lord Bacon speaks of a Turkish bow which has been known to pierce a steel target, or a piece of brass, two inches thick; while other authorities declare they have seen an arrow shot from a bow to the distance of 600 yards. [For further remarks see *Archery*.]——Bow, in mechanics, is the name of several things so called from their curved figure; as, the *turner's bow*, a pole fixed to the ceiling to which the cord is fastened that wheels round the piece to be turned; the *bow of a saddle*, the piece of wood on each side, laid archwise to receive the upper part of a horse's back.——A *bow* is also the name of an instrument formerly used at sea for taking the sun's altitude; consisting of a large arch of ninety degrees graduated, a shank or staff, a shade vane, a sight vane, and an horizon vane.——And in music, *bow* is the name of that well-known implement (consisting of a round stick furnished with hair) by the means of which the tone is produced from violins, &c.

A FEW DROPS OF AQUA AMMONIA IN A BOTTLE OF NEW BRANDY WILL GIVE IT ALL THE QUALITIES OF THAT OF THE OLDEST DATE.

BO'WLDER, or BO'WLDER-STONE, a roundish stone found on the sea-shore, or in the channels of rivers, &c., worn smooth by the action of water.——In geology, the term *bowlder* is used for rounded masses of any rock, transported from their original bed by water. Large bowlders of granite are very common on the surface of the most recent formations.

BO'WLDER-WALL, a wall, generally on the sea-coast, constructed of large pebbles or bowlders of flint, which have been rounded by the action of water.

BOWLS, a game played upon a fine smooth grassy surface, used solely for the purpose, and denominated a bowling-green.

BOX'ERS, a kind of athletæ, who combat or contend for victory with their fists. Among the Romans they were called *pugiles;* hence the appellation of *pugilists* to the boxers of the present day.

BRACE, in architecture, a piece of timber framed in with bevel joints, to keep the building from swerving either way. When the brace is framed into the principal rafters, it is sometimes called a *strut.*——Braces, in marine language, are ropes belonging to all the yards of a ship, except the mizen, two to each yard, reeved through blocks that are fastened to pennants attached to the yard arms.——*To brace about,* is to turn the yards round for the contrary tack.——*To brace to,* is to check or ease off the lee braces, and round-in the weather ones, to assist in tacking.

BRA'CHIAL, in a general sense, denotes something belonging to the arm; as, the *brachial artery.*——Brachia'lis is particularly used for a thick and broad muscle of the arm, lying between the shoulder-bone and the elbow.

BRA'CHIATE, an epithet for having branches in pairs, all nearly horizontal, and each pair at right angles with the next.

BRACHYG'RAPHY, stenography, or the art of writing in short hand.

BRACHYL'OGY, in rhetoric, the method of expressing anything in the most concise manner.

BRACHYPNÆ'A, in medicine, short respiration at small intervals.

BRAC'TEA, or BRACTE, in botany, a floral leaf, one of the seven fulcrums or props of plants. It differs from other leaves in shape and colour, and is generally situated on the peduncle, so near the corolla, as easily to be mistaken for the calyx.

BRAC'TEOLATE, in botany, an epithet for plants which are furnished with bracteoles, or little bractes.

BRAH'MINS, or BRAM'INS, the caste or hereditary division of Hindoos peculiarly devoted to religion and religious science, in the same manner as, among the Jews, the priesthood was ordained to continue in the tribe of Levi. The families of this caste claim peculiar veneration from the rest, and seem, in their name of *bramins,* to claim the merit of being the more immediate followers of Brahma, their incarnate deity. Some of them, however, are described as very corrupt in their morals; while others live sequestered from the world, devoted to superstition and indolence. To the bramins we are indebted for whatever we know of the Sanscrit, or ancient language of the country, in which their sacred books are written.

BRAIN, in anatomy, that soft white mass enclosed in the cranium or skull, in which all the organs of sense terminate, and the intelligent principle of man is supposed to reside. It consists of two principal parts, connected by delicate veins and fibres; and is divided above into a right and left hemisphere, and below into six lobes. The external portion of the brain is soft and vascular, and is called the *cortical* substance; the internal is called the *medullary.* Between the skull and the brain there are three membranes; the outer one called the *dura mater,* which is strong, dense, and elastic; the next is the *tunica arachnoidea,* which is thin and nearly transparent; and an inner one, called the *pia mater,* which is very vascular, and covers the whole surface of the brain. It is worthy of observation, that every part of the brain is exactly symmetrical with the part opposite, and that irregularities in its structure are far more uncommon than in the other parts of the human body.

BRAN, the skins or husks of grain, especially wheat ground, separated from the flour by a sieve or boulter.

BRANCH, a shoot from the main bough of a tree. Also several things similar in figure, as the antlers or shoots of a stag's horn; the branches of veins, branches of a river, &c.

BRANCH'IÆ, in ichthyology, are the gills, or organs of respiration answering to the lungs in other animals, with which all fishes are provided, except the cetaceous tribe and the lamprey. They are eight in number, and serve the fish to take in and throw out water with the air.

BRANCHIOSTE'GIOUS, an epithet for an order of fishes in the Linnæan system, including such as have gills without bony rays, as the pipe fish, sucker, frog fish, &c.

BRAN'DY, a spirituous and inflammable liquor, extracted from wine and other liquors by distillation. The wine-brandy, made in France, is esteemed the best in Europe. It is made wherever wine is made, and pricked wine is used for this purpose, rather than good wine. The chief brandies for foreign trade, and those accounted best, are the brandies of Bourdeaux, Rochelle, Cognac, Blasois, Poictou, Touraine, Anjou, Nantes, Burgundy, and Champagne. As we hear so much of the good qualities of *British* brandy, and have never been so fortunate as to discover them, perhaps it may not be amiss to give a recipe from Dr. Ure. He says, "the following formula may be proposed for converting a silent or flavourless corn spirit, into a factitious brandy. Dilute the pure alcohol to the proof pitch, add to every hundred pounds weight of it from half a pound to a pound of argol (crude winestone) dissolved in water, a little acetic ether, and French-wine vinegar,

BRANDY WILL PREVENT INFERIOR WINE FROM SPOILING, BUT IT TENDS TO DESTROY WHAT VINOUS FLAVOUR IT BEFORE POSSESSED.

some bruised French plums, and flavour-stuff from Cognac; then distil the mixture with a gentle fire, in an alembic furnished with an agitator. The spirit which comes over may be coloured with nicely burnt sugar (caramel) to the desired tint, and roughened in taste with a few drops of tincture of catechu or oak-bark. The above recipe, he observes, will afford a spirit free from the deleterious drugs too often used to disguise and increase the intoxicating power of British brandies; one which may be reckoned as wholesome as alcohol, in any shape, can ever be!"

BRASS, in metallurgy, a factitious compound metal, of a yellow colour, consisting of copper and about one third of its weight of zinc. It is more fusible than copper, and not so apt to tarnish: it is malleable when cold, but not when heated. In order to combine copper most intimately with zinc, and yet to preserve its malleability, the ingenious process of cementation has been resorted to in the manufacture of brass, which is performed by heating in a covered pot alternate layers of copper in small pieces, with zinc and charcoal, and continuing the fire till the copper is thoroughly impregnated with the zinc. The mode has been thus described:—Melt the mixture in a crucible till the blue flame is seen no longer on the lid of the crucible, and when cold a fine button of brass is found beneath the scoria, weighing rather more than the copper alone, obtainable from its oxyde without the calamine. Brass is so ductile that sieves of extreme fineness are wove with the wire, after the manner of cambric weaving.—— Corinthian Brass has been famous in antiquity, and is a mixture of gold, silver, and copper. L. Mummius having sacked and burnt the city of Corinth, B.C. 146, it is said this metal was formed from the immense quantities of gold, silver, and copper, with which that city abounded, and which by the violence of the conflagration were thus melted and run together.

BRAS'SICA, Cabbage, in botany, a genus of the *tetradynamia-siliquosa* class of plants. This well-known vegetable was as much used by the ancients as it is by the moderns. The principal species are the *brassica oleracea*, or common cabbage; *brassica napus*, wild cabbage or rape; *rapa rotunda*, or turnip, &c.

BRAURO'NIA, an Athenian festival celebrated every five years in honour of Diana, who was surnamed Brauronia.

BRAVU'RA, in music, an air so composed as to enable the performer to show his skill in the execution of difficult passages. It is also sometimes used for the style of execution.

BRA'ZING, the soldering or joining two pieces of iron together by means of thin plates of brass, melted between the pieces that are to be joined. If the work be very fine, as when two leaves of a broken saw are to be brazed together, they cover it with pulverized borax, melted with water, that it may incorporate with the brass powder, which is added to it. The piece is then exposed to the fire without touching the coals, and heated till the brass is seen to run.

BRA'ZING, the soldering together of edges of iron, copper, brass, &c., with an alloy consisting of brass and zinc, sometimes with a little tin or silver.

BRAZIL'-WOOD, the Linnæan name of which is *cæsalpinia crista*, is found in the greatest abundance in the province of Pernambuco, in Brazil; but it is also met with in many other parts of the western hemisphere, and in the East Indies. The tree is large, crooked, and knotty; it is very hard, and susceptible of a fine polish; is pale when newly cut, but on exposure to the air is of a red colour. The juice of the Brazil-wood is made use of for dyeing silk of a crimson colour, but it is inferior and less permanent than the crimson obtained from cochineal. It is also used, in combination with certain mordants and alkalies, for various shades of red, purple, and violet, in cotton and woollen cloths. The word *brazil* is of Portuguese origin (from *braza*, a live coal, or glowing fire). This name was given to the wood for its colour, and it is said that king Emanuel of Portugal so named the country in America on account of its producing this wood.

BREACH, in fortification, a gap or opening made in any part of the works of a town by the besiegers, in order to facilitate an attack upon the place. The breach is called *practicable*, if it is large enough to afford a reasonable hope of success, in case of an assault.——*To repair a breach*, is to stop or fill up the gap with gabions, fascines, &c., so as to prevent an assault.—— In law, a *breach* is the violation of a contract.——*Breach of pound*, is the breaking any place where cattle are distrained.—— *Breach of prison*, an escape by breaking out of prison.

BREAD, a preparation of flour mixed with water, fermented with yeast, and baked in an oven; water gives flour consistency, but yeast separates the parts, and renders it light and wholesome. In the earliest antiquity, we find the flour or meal of grain used as food; and by degrees the artificial preparation of bread by proper fermentation was discovered; but, from all we read, it would appear, that for many ages the meal derived from the bruised grain was merely mixed with milk and water, and a tough paste was made into balls. The superiority of wheat to all other farinaceous plants in the manufacture of bread is so very great, that wherever it is successfully cultivated, wheaten bread is now used to the nearly total exclusion of most others. But in the sixteenth century, rye bread and oatmeal formed the chief part of the diet of servants even in great families; and in the reign of Charles I. barley bread was the usual food of the middle classes; nay, so lately as a century ago, not more than half the people of England fed on wheaten bread. Thanks to the improved state of agriculture, the produce

THE BONES OF FISHES, BEING GROUND, ARE MIXED UP WITH FARINACEOUS SUBSTANCES, AND USED AS BREAD BY MANY NORTHERN NATIONS.

WHATEVER GRAIN IS USED FOR BREAD, WHETHER WHEAT, BARLEY, OATS, RYE, OR MAIZE, HAS THE NAME OF "BREAD-CORN."

of the wheat crops in England has since that time been more than trebled; barley is no longer used, except in the distilleries and in brewing; the use of oats as bread is limited even in Scotland and Ireland; and the consumption of rye bread is very inconsiderable. The process of making bread is nearly the same throughout Europe, though the materials of which it is composed vary with the farinaceous productions of different climates and soils. The French, who particularly excel in the art of baking, have a great many different kinds of bread, from the *pain bis*, which is the coarsest of all, to the *pain mollet*, or soft bread, made of the purest flour, without any admixture. In this country we have fewer varieties of bread, and these differ chiefly in their degrees of purity. Our white or fine bread is made of the purest flour; our wheaten bread of flour, with a mixture of the finest bran; and our household bread, of the whole substance of the grain, without the separation either of the fine flour or coarse bran. Like the French, we have also many sorts of small bread, in which butter, milk, and eggs are incorporated; but our Gallic neighbours have a greater variety. "The object of baking is to combine the gluten and starch of the flour into one homogeneous substance, and to excite such a vinous fermentative action, by means of its saccharine matter, as shall disengage abundance of carbonic acid gas in it for making an agreeable, soft, succulent, spongy, and easily digestible bread. The two evils to be avoided in baking are, hardness on the one hand, and pastiness on the other."——The *Adulteration of Bread*, by means of alum, has long been a prolific source of evil, inasmuch as the health of the public, and of children especially, is often seriously injured by it. It is, however, fortunate, that to discover this pernicious practice no chemical skill is required: on macerating a small piece of the crumb of new-baked bread in cold water, sufficient to dissolve it, the taste of the latter, if alum has been used by the baker, will acquire a sweetish astringency. Another method of detecting this adulteration consists in thrusting a heated knife into a loaf before it has grown cold; and if it be free from that ingredient, scarce any alteration will be visible on the blade; but, in the contrary case, its surface, after being allowed to cool, will appear slightly covered with an aluminous incrustation. Dr. Ure's directions for discovering the presence of alum in bread are given in the following words:—"When alum is present in bread it may be detected by treating the bread with distilled water, filtering the water first through calico, and next through filtering paper, till it becomes clear; then dividing it into two portions, and into the one pouring a few drops of nitrate or muriate of barytes, and into the other a few drops of water of ammonia. In the former a heavy white precipitate indicating sulphuric acid will appear, and in the latter a light precipitate of alumina, redissoluble by a few drops of solution of caustic potash." He further says, "When chalk or Paris plaster is used to sophisticate flour, they may be best detected by incinerating the bread made of it, and examining the ashes with nitric acid, which will dissolve the chalk with effervescence, and the Paris plaster without. In both cases the calcareous matter may be demonstrated in the solution, by oxalic acid, or better by oxalate of ammonia." That there has been much reason to complain of the adulteration of bread, particularly in times of scarcity, or whenever the high price of this grand necessary of life has stimulated the cupidity of fraudulent dealers, there can be no doubt; but we are inclined to believe that the practice, to any injurious extent, is much less prevalent than the public suspect. The subject, however, is too important to be overlooked, and the foregoing tests are at least worthy of insertion.

BREAD'-FRUIT-TREE *(artocarpus incisa)*. It appears to have been first discovered to Europeans by the great navigator Dampier, and is indigenous in Otaheite and other islands of the South Sea. The tree is said to be of the size of a large apple tree; the leaves broad, and of a dark green. The fruit is appended to the boughs in the manner of apples, and of about the size of a pound of bread, inclosed with a tough rind, which, when ripe, turns of a yellow colour. The internal part is yellow, soft, and sweet. The natives bake it in an oven till the rind is black; and this being scraped off, they eat the inside, which is then white, resembling new-baked bread, having neither seed nor stone. Some of the trees have been planted in Jamaica, and other West India islands, where it is used as a delicacy; and w. ether employed as bread, or in the form of pudding, it is considered highly palatable. But in Otaheite the bread-fruit-tree not only supplies food, but clothing, and numerous other conveniences of life. The inner bark, consisting of a white fibrous substance, is formed into a kind of cloth; and the wood is used for the building of boats and houses.

BREAK'ERS, billows which break violently over rocks lying under the surface of the sea, exhibiting a white foam, and being distinguished by a peculiar hoarse roaring, very different from that of waves in deep water.

BREAKING GROUND, a military term, for opening the trenches and beginning the works for a siege.

BREAK'WATER, the hull of a vessel sunk at the entrance of a harbour, or any erection of wood or stone placed there to break the force of the water, such as the Breakwater erected in Plymouth Sound.

BREAST'PLATE, a piece of defensive armour worn on the breast, which formerly was deemed of great importance, but in modern warfare has fallen much into disuse.——In horsemanship, a leathern strap running from one side of the saddle, across the horse's breast, to the other, to keep it in its place.

BREAST-PLOUGH, a sort of plough

which is driven forward by the breast, and is used in paring off turf from the land.

BREAST'-WHEEL, a water-wheel, which receives the water at about half its height, or at the level of its axis.

BREAST'-WORK, a military term, for works thrown up as high as the breast of the besieged. Also a sea term, for the balustrade of the quarter deck.

BREATH, the air inhaled and expelled in the respiration of animals. A bad breath is often caused by local affections in the mouth or windpipe, but more frequently by carious teeth, and by many kinds of food, as onions, &c. The disagreeableness of a bad breath is too evident to require comment; but we have not yet arrived at that refinement in moral legislation which they have reached in Prussia, where a bad breath furnishes ground for a divorce!

BREC'CIA, or PUD'DING-STONE, a sort of aggregate earth, consisting of fragments of stones united by some common cement.

BREECH or BRITCH, the hinder part of a gun, from the cascabel to the bore. Also a sea term, for the angle of knee-timber in a ship.

BREECH'ING, or BRITCH'ING, a rope used to secure the cannon of ships of war, and prevent them from recoiling too much in the time of battle.

BREED'ING, in a moral sense, denotes a person's deportment or behaviour in the external offices and decorums of social life. In this sense, we say, well-bred, ill-bred, a man of breeding, &c. Lord Shaftesbury compares the well-bred man with the real philosopher: the conduct and manners of the one is formed according to the most perfect ease and good entertainment of company; of the other, according to the strictest interest of mankind; the one according to his rank and quality in his private station; the other, according to his rank and dignity in nature. In short, *good-breeding* is politeness, or the union of those qualifications which constitute genteel deportment.——In husbandry, *breeding* is that part which consists in the rearing of cattle or live stock of different kinds, particularly by crossing or mingling one species or variety with another, so as to improve the breed.

BREEZE, a shifting wind, that blows from sea or land for some certain hours in the day or night; common in Africa, and some parts of the East and West Indies. The sea breeze is only sensible near the coasts; it commonly rises in the morning, about nine, proceeding slowly in a fine small black curl on the water, towards the shore; it increases gradually till twelve, and dies, about five. Upon its ceasing, the land-breeze commences, which increases till twelve at night, and is succeeded in the morning by the sea breeze again.——BREEZE, in brick-making, small ashes and cinders, sometimes made use of instead of coals, for the burning of bricks.

BREVE, in music, a note of the third degree of length. It is equal to two semibreves, or when dotted, to three: the former is called an *imperfect*, the latter, a *perfect* breve.

BREVET', a military term, expressive of nominal promotion without additional pay: thus, a brevet major serves a captain, and draws pay as such. The word is borrowed from the French, signifying a royal act granting some favour or privilege; as *brevet d'invention*.

BRE'VIA VA'SA, in anatomy, small venous vessels passing from the stomach to the splenetic veins.

BRE'VIARY, the book containing the daily service of the church of Rome. Originally every body was obliged to read the breviary; but by degrees the obligation was reduced to the beneficiary clergy only, who are enjoined under penalty of mortal sin and ecclesiastical censures, to recite it at home, when they cannot attend in public. In the 14th century there was a particular reserve granted in favour of bishops, who were allowed, on extraordinary occasions, to pass three days without rehearsing the breviary.

BREVIA'RIUM, in Roman antiquity, a book first introduced by Augustus, containing an account of the application of the public money.

BRE'VIATOR, an officer under the eastern empire, whose business it was to write and translate briefs.

BREVIER', in printing, a small kind of type, or letter, between nonpareil and bourgeois.

BRE'VIS, in anatomy, an appellation given to several muscles, on account of their shortness.

BREXAN'TES, a small kind of frog, to the blood of which was falsely ascribed, according to Galen, the virtue of restoring the lost hair.

BRI'BERY, the act of prevailing upon any individual to do a legal or illegal act for the sake of reward.

BRICK, a composition of argillaceous earth, first moistened and made fine by treading and grinding, then formed into long squares, four inches and a half broad and nine long, and baked or burnt in a kiln, or in a *clamp*, to serve as stones in building. The different kinds of bricks made in England are principally *place* bricks, grey and red *stocks*, *marl facing* bricks, and *cutting* bricks. The place bricks and stocks are used in common walling; the marls, which are of a fine yellow colour, hard, and well burnt, are used in the outside of buildings; and the finest kind of marl and red bricks, called cutting bricks, are used in the arches over windows and doors, being rubbed to a centre, and gauged to a height. An able workman will make, by hand, 5000 common bricks in a day. The use of unburnt bricks is of great antiquity; they are found in the Roman and Grecian monuments, and even in the ruins of Egypt and Babylon. They were dried in the sun, instead of being burned, and mixed with chopped straw to give them tenacity; and owing to the extreme heat and dryness of the climate they acquired such hardness

SINGERS PRODUCE THEIR HIGH NOTES BY LESSENING THE APERTURE AND INCREASING THE VELOCITY OF THE "BREATH."

IN SOME PARTS OF AMERICA BRICKS ARE MADE OF AGARIC MINERAL, AND BEING BUOYANT IN WATER, ARE CALLED "FLOATING BRICKS."

as to have lasted for several thousand years.

BRI'DEGROOM, and BRIDE, the names given to a newly married man and woman. But these terms are applied to them at the marriage festival, before they are married, as well as after the ceremony; and the true meaning is, a man and woman espoused or contracted to be married. The word bridegroom was formerly written *bridegoom*, the last syllable being derived from the Saxon *guma*, a man. *Groom* is a Persian word, signifying one who has the care of horses: hence it appears, that by an error of pronunciation we have been led into this ridiculous corruption of the original word! Among the Greeks it was customary for the bride to be conducted from her father's house to her husband's in a chariot, the evening being chosen for that purpose, to conceal her blushes: she was placed in the middle, her husband sitting on one side, and one of her most intimate friends on the other: torches were carried before her, and she was entertained in the passage with a song suitable to the occasion. When they arrived at their journey's end, the axle-tree of the chariot they rode in was burnt, to signify that the bride was never to return to her father's house. Among the Romans, when a bride was carried home to her husband's house, she was not to touch the threshold at her first entrance, but was to leap over it.

BRIDGE, any structure of wood, stone, brick, or iron, raised over a river, or canal; its strength depending on its own form, its unyielding materials, and the permanence of the abutments. Among the bridges of antiquity, that built by Trajan over the Danube is allowed to be the most magnificent; it was composed of twenty arches, of a hundred and fifty feet in height, and their opening from one pier to another was a hundred and sixty feet: the piers of this fine bridge are still to be seen on the Danube, being erected between Servia and Moldavia, a little above Nicopolis. In Great Britain, the art of building bridges appears to have been diligently studied from early times. The most ancient bridge in England is the Gothic triangular bridge at Croyland in Lincolnshire, said to have been built in 860; but the ascent is so steep that none but foot-passengers can go over it. The longest bridge in England is that over the Trent, at Burton in Staffordshire, built in the 12th century. It consists of thirty-four arches, and is 1545 feet long. Old London Bridge was commenced in 1176, and was encumbered with houses for a long period: they were, however, removed in 1758. Among the great architectural works of our own times are Waterloo and New London bridges. The former consists of nine elliptical arches of 120 feet span each, is 1250 feet long, and has a flat surface in its whole course. The latter, which was commenced in 1824, and finished in 1831, consists of five elliptical arches, the centre one being 152 feet span, and the least of them being larger than any stone arch of this description ever before erected. This magnificent structure, which was built after a design of the late John Rennie, contains about 120,000 tons of granite, measures 982 feet from the extremities of the abutments, with 53 feet of roadway between the parapets, and cost about two millions sterling. There are several cast-iron bridges in England, the chief of which is Southwark-bridge, over the Thames: it consists of three arches, and is the finest iron bridge in the world.——*Suspension Bridges.* Although pendent or hanging bridges have by some persons been deemed a modern invention, we find that the use of them is of great antiquity in mountainous countries; though the scientific principles which distinguish those of recent construction may perhaps be sought in vain among them. The most remarkable bridge of suspension in existence is allowed to be that built by Mr. Telford over the Menai strait, between the isle of Anglesea and Caernarvonshire in Wales, which was finished in 1825. Others also, most elegant in their design, and fully answering all that can possibly be expected from them, have been recently erected; viz. over the Thames at Hammersmith, at Shoreham, and at various other places. In these the flooring or main body of the bridge is supported on strong iron chains or rods, hanging in the form of an inverted arch, from one point of support to another. The points of support are the tops of strong pillars or small towers, erected for the purpose. Over these pillars the chain passes, and is attached, at each extremity of the bridge, to rocks or massive frames of iron, firmly secured under ground. The great advantage of suspension bridges consists in their stability of equilibrium, in consequence of which a smaller amount of materials is necessary for their construction than for any other bridge. If a suspension bridge be shaken, or thrown out of equilibrium, it returns by its weight to its proper place, whereas the reverse happens in bridges which are built above the level of their supporters.——A *draw-bridge*, is one that is fastened with hinges at one end only, so that the other may be drawn up; in which case, the bridge stands upright, to prevent an enemy from passing the moat.——A *bridge of communication* is that made over a river, by which two armies, or forts, which are separated by that river, have a free communication with one another.——A *floating bridge* is a sort of redoubt, consisting of two boats, covered with planks, which are solidly framed, so as to bear either horse or cannon.——A *bridge of boats* consists of a number of common boats joined parallel to each other at the distance of six feet, till they reach across a river. They are then covered with planks, so as to serve as a passage for men and horses. We may here observe, in conclusion, that in military operations, temporary bridges are often formed in this and various other ways, by laying planks upon boats, pontoons, or such other buoyant supporters as readily present themselves.

THE WARM SPRING AT BRISTOL RISES NEAR THE BOTTOM OF THE CLIFF, AND RUSHES THROUGH THE ROCK, DISCHARGING SIXTY GALLONS PER MINUTE.

A COMPOSITION MADE BY GRINDING GOLD-LEAF WITH HONEY, AND THEN WASHING OFF THE HONEY, IS OFTEN USED FOR "BRONZING."

BRIDOON' the snaffle and rein of a military bridle, which acts independently of the bitt and curb at the pleasure of the rider.

BRIEF, in law, an abridgment of the client's case, made out for the instruction of counsel on a trial at law; wherein the case of the plaintiff, &c. is to be briefly, but completely, stated.——*Brief*, in music, a measure of quantity, which contains two strokes down in beating time, and two up.——*Briefs, apostolical*, letters or written messages of the pope, addressed to princes or magistrates, respecting matters of public concern.

BRIGA'DE, a party or division of soldiers, either horse or foot. An army is divided into brigades of horse and brigades of foot: a brigade of horse is a body of eight or ten squadrons; a brigade of foot consists of four, five, or six battalions.

BRIG'ANDINE, a kind of ancient defensive armour, consisting of thin jointed scales of plate, so arranged as to be pliant and easy to the body.

BRIG'ANTINE, a small light vessel, which can both row and sail well, being adapted either for fighting or for chase.

BRIM'STONE, the vulgar name for SULPHUR, [which see.]

BRINE, is either native, as sea-water, or the water flowing from salt springs; or artificial, being formed by the dissolution of salt in water.

BRIS'TLE, the hair of swine, which is much used by brushmakers, particularly that imported from Russia. —— *Bristle-shaped*, in botany, an epithet for a leaf in the shape of a bristle; that is, shorter than a capillary leaf.

BRIS'TOL-WATERS, mineral waters of the lowest temperature of any in England, being the fourth in degree amongst the waters which are esteemed warm. The waters of Bath are the first, Buxton the second, and Matlock the third. The constituent parts of Bristol water are carbonic acid gas, lime, and magnesia, besides the muriatic and vitriolic acids.

BRITAN'NIA, the name given by the Romans to the island of Britain, which is represented on their medals under the figure of a female resting her left arm on a shield.

BRITIN'IANS, a body of Augustine monks who received their name from Britini, in Ancona. They were distinguished by their austerities in living.

BRI'ZA, or QUAKING-GRASS, in botany, a genus of plants, class *triandria*. There are several species, some of which are annuals.

BRIZE, in agriculture, a term for ground that has lain long untilled.

BRIZEVENT', in horticulture, shelters on the north side of melon beds where walls are wanting.

BROAD'SIDE, a sea term, for a discharge of all the guns on one side of a ship. ——In printing, one full page printed on one side of a whole sheet of paper; of which a posting-bill is an example.

BROAD'SWORD, a sword with a broad blade, chiefly designed for cutting.

BROCA'DE, a stuff of gold, silver, or silk, raised and enriched with flowers, foliages, and other ornaments, according to the fancy of the merchants or manufacturers.

BROCHET'TE, in cookery, a particular mode of frying chickens.

BRO'DIUM, in medicine, the liquor in which some solid medicine is preserved.

BROGUE, a defective pronunciation of a language, particularly applied to the Irish manner of speaking English.

BRO'KER, a name applied to persons of several and very different professions, the chief of which are exchange-brokers, stock-brokers, pawn-brokers, and brokers who sell household furniture.

BROME, in chemistry, a peculiar substance obtained from the bittern of sea-water, or the washings of the ashes of sea-weed. It possesses the bleaching powers of chlorine, and, like that substance, is eminently hostile to life; a single drop of it placed upon the bill of a bird being sufficient to kill it.

BROME GRASS, a sort of grass much resembling oats in the stalk. leaf, &c.; whence it has also been called oat grass.

BRON'CHIA, in anatomy, the ramifications of the trachea, or windpipe, which convey the air to the lungs.——*Bronchial Glands*, absorbent glands situated at the root of the lungs.——*Bronchial Arteries* and *Veins*, those which accompany the bronchiæ into the lungs.

BRON'CHOCELE, in surgery, a tumour arising in the anterior part of the neck, arising from some violence, as straining in labour, lifting of weights, &c.

BRONCHOT'OMY, in surgery, an incision made in the aspera arteria, or windpipe, which is necessary in many cases, and especially in a violent quinsey, to prevent suffocation from the great inflammation or tumour of the parts. It is also sometimes called *laryngotomy* and *tracheotomy*.

BRON'TIUM, in Grecian antiquity, a place underneath the floor of the theatres, in which were kept brazen vessels full of stones and other materials, with which they imitated the noise of thunder.

BRONTOL'OGY, the doctrine of thunder, or an explanation of its causes, phenomena, &c. together with the presages drawn from it.

BRONZE, a mixed metal, composed principally of copper, with a small portion of tin and other metals. The ancients used bronze for a great variety of purposes; hence, arms and other instruments, medals and statues of this metal, are to be found in all cabinets of antiquities. The moderns have also made much use of bronze, particularly for statues exposed to accidents, or the influence of the atmosphere, and for casts of celebrated antiques. Bronze of a good quality acquires, by oxydation, a fine green tint, called *patina antiqua*, or *æruga*; which appearance is imitated by an artificial process, called *bronzing*.

BROOM, a shrub of which there are several kinds, having a papilionaceous flower,

THE WEALTH WHICH THE BUCCANEERS ACQUIRED WAS SPENT IN GAMBLING, OR IN THE INDULGENCE OF OTHER CRIMINAL PLEASURES.

which becomes a short roundish swelling pod, containing a kidney-shaped seed in each. It is used by dyers to give a yellow colour.

BROWN'ISTS, in church history, a religious sect, which sprung up in England towards the end of the 16th century, and long known under the denomination of *Independents*. Their leader was one Robert Brown, born at Northampton, yet his name was not adopted by them, but rather given to them by their adversaries as a nickname. They equally disliked episcopacy and presbyterianism. They condemned the solemn celebration of marriages in churches, maintaining, that matrimony being a political contract, the confirmation of it ought to proceed from the civil magistrate; an opinion in which they are by no means singular, as may be adduced from the late enactments of our legislature on this subject. They also rejected all forms of prayer, and held, that the Lord's prayer was not to be recited as a prayer; being given only as a model upon which to found our supplications. Any lay brother was allowed the liberty of giving a word of exhortation to the people, and after the sermon to reason upon the doctrines that had been preached. In a word, every church on their model is a body corporate, being accountable to no class, synod, convocation, or other jurisdiction whatever. During Elizabeth's reign the laws were enforced against them with great severity, and accordingly many retired and settled at Amsterdam, where their church flourished nearly a century.

BRU'MAL, the winter quarter of the year, beginning at the shortest day.

BRU'TÆ, the second order of animals of the *Mammalia* class, who have no fore-teeth in either jaw; consisting of nine genera, the principal of which are the sloth, rhinoceros, elephant, &c.

BRUMA'LIA, in antiquity, a festival celebrated by the Romans in honour of Bacchus twice a-year; viz., on the twelfth of the calends of March, and the eighth of the calends of December.

BRUNFEL'SIA, in botany, a genus of shrubby plants, natives of the East Indies, named by Plumier after Brunfelsius, a German monk and physician: class 14 *Didynamia*, order 2 *Angiospermia*.

BRU'NIA, in botany, a genus of plants named after Cornelius Brun, a traveller, class 5 *Pentandria*, order 1 *Monogynia*. There are various species which are all shrubs, and natives of Ethiopia.

BRUXANEL'LI, a Malabar tree, the bark of which is diuretic.

BRUTE, an animal without the use of reason, or that acts by mere instinct, in which sense it denotes much the same with beast, and comprehends all animals excepting mankind. Philosophers, however, are far from being agreed on this subject; some making brutes mere machines, whilst others allow them not only reason, but immortality. Others take a middle course, and allow brutes to have imagination, memory, and passion; but deny that they have understanding or reason, at least, in any degree comparable to that of mankind. The sagacity of many brutes is indeed admirable; yet what a prodigious difference is there between that sagacity and the reason of mankind!

BRY'ONY, in botany, a genus of the *monœcia-syngenesia* class of plants; the flower of which consists of a single petal, divided into five deep segments; and the fruit is a roundish berry, containing a few seeds. The root of the rough or white bryony is a strong irritating cathartic.

BUB'BLE, a bladder in water, or a vesicle filled with air.——BUBBLE, in commerce, a term given to any delusive scheme or project for raising money on imaginary or false pretences; as the famous "South Sea bubble," [which see] and hundreds since.

BU'BO, in medicine, the name of any tumour in the lymphatic glands, particularly in the groin or axilla.

BU'BONOCELE, in medicine, the inguinal hernia, or rupture of the groin, formed by a prolapsus of the intestines or omentum.

BUCANIER', or BUCCANEER', a name given to those piratical adventurers, chiefly English and French, who, in the seventeenth century, committed the most excessive depredations on the Spaniards in America. The name had been given to the first French settlers on the island of St. Domingo, whose sole employment consisted in hunting bulls or wild boars, in order to sell their hides and flesh; and as they smoked and dried the flesh of the animals according to the manner of the Indians, which was called *buccaneering*, they thus obtained the name of buccaneers.

BUCA'O, in ornithology, a species of owl, in the Phillipine isles, of a beautiful plumage, and size of a peacock, but remarkable for its hideous scream.

BUCAR'DIA, in mineralogy, a stone shaped like the heart of an ox.

BUC'CANAL-GLANDS, in anatomy, the small glands of the mouth under the cheek, which assist in secreting the saliva.

BUCCELA'TION, in medicine, a method of stopping an hæmorrage, by applying pieces of lint to the vein or artery.

BUCCELLA'RII, an order of soldiery under the Greek emperors, appointed to guard and distribute the rations of bread.

BUCCI'NA, an ancient musical and military instrument, somewhat similar to the modern trumpet. Hence BUCCINATOR, or trumpeter.

BUC'CINITE, fossil remains or petrifactions of the shells called *buccinum*.

BUCCINA'TOR, in anatomy, a muscle of the cheek, so called from its office of forcing out the breath.

BUC'CULA, in antiquity, that part of the helmet which protected the cheeks.

BUCEN'TAUR, the name of the large vessel which the Venetians formerly used in the ceremony of espousing the sea.

BU'CEROS, the hornbill or Indian raven; a genus of birds of the order *Picæ*; of which there are several species.

RELIGION WAS STRANGELY BLENDED WITH THE VICES OF THE BUCCANEERS, AND THEY ALWAYS BEGAN THEIR ENTERPRIZES WITH A PRAYER.

BUCK, the male of the fallow-deer. In his first year, a buck is called a fawn; the second, a pricket; the third a sorel; the fourth, a sore; the fifth, a buck of the first head; and the sixth, a great buck. The word is also used to denote the male of the hare and rabbit tribes.

BUCH'OLZITE, a recently discovered mineral, marked with black and white spots.

BUCK'LER, a piece of defensive armour used by the ancients, commonly composed of hides, fortified with plates of metal.——*Bucklers, votive*, were those consecrated to the gods, and hung up in their temples, in commemoration of some hero, or as a thanksgiving for a victory obtained over an enemy, whose bucklers, taken in war, were offered as a trophy.——*Buckler*, in naval language, are two pieces of wood fitted together to stop the hawser-holes, so as to prevent the ship taking in too much water in a heavy sea.

BUCK'RAM, a sort of coarse cloth made of hemp, gummed, calendered, and dyed of several colours. It is used in drapery, garments, &c., required to be kept stiff to their form.

BUCOL'IC, in ancient poetry, a poem relating to shepherds and rural affairs. The most celebrated of the ancient bucolics are those of Virgil.

BUD, that part of a plant which contains the embryo of the leaves, flowers, &c. It is called by botanists the *hybernacle*, or winter receptacle of the leaves or flowers of plants, and is an epitome of a flower, or of a shoot, which is to be unfolded the succeeding summer.

BUD'DING, a method of propagating fruit trees. The stocks are raised from seed; and in these, buds of other trees are inserted, which invariably produce the same kind of tree, fruit, and flower, as those from which the buds are taken.

BUDD'HISTS, the followers or worshippers of Buddha, the founder of a very ancient religion in India, which afterwards spread to Japan, Thibet, and China, where it exists at the present day. According to an article in the "Journal des Savans" of 1821, which cites the Japan Encyclopædia, Buddha, whose historical name was Tshakia-muni, was born under the reign of Tshao-wang, of the dynasty of Tsheu, 1029 B.C., and died under the reign of Mouwang, 950 B.C. His disciple Mahakaya succeeded him, and is the first saint or patriarch of Buddhism; but a regular dynasty of successors filled this important station till A.D. 713. Their history is mixed with the grossest fables; but it is clear that they devoted themselves to religious exercises and constant contemplation, and condemned themselves to the severest abstinence. Besides many other monuments of the ancient worship of Buddha, there are two particularly remarkable—the ruins of the gigantic temple Boro-Budor, in Java, and the five large subterranean halls, called Pantsh-Pandu, on the way from Guzerat to Malwa. Tradition ascribes these astonishing works of ancient Indian architecture and sculpture, which far surpass the skill of the modern Hindoos, to the Pandus, the heroes of Indian mythology.

BUDG'ET, the name given to the annual statement made to the House of Commons, of the public finances.

BUFF, in commerce, a sort of leather prepared from the skin of the buffalo; which, when dressed with oil after the manner of chamois, makes what we call buff-skin. This is a very considerable article in the French, English, and Dutch commerce at Constantinople, Smyrna, and along the coast of Africa. The skins of elks, oxen, and some other animals, when prepared after the same manner as that of the buffalo, are likewise called *buffs*.

BUF'FALO, in zoology, the *Bos bubalus* of Linnæus, an animal of the ox-kind, with very large, crooked, and resupinated horns. It came originally from India, but is now found in most of the warmer countries of the eastern hemisphere. It is larger and less docile than the common ox, and is fond of marshy places and rivers. The name is also applied to the bison of North America, and to wild oxen in general.

BUF'FO, the Italian for a singer, or actor, when he takes the humorous part in comic operas, &c.

BUFFO'NIA, in botany, a genus of plants of the *tetandria-digynia* class, called after the naturalist Buffon.

BUFFET' was anciently a little apartment separated from the rest of the room by slender wooden columns, for the disposing of china, glass, &c.

BU'FONITES, or BUFONIUS LAPIS, in mineralogy, a sort of stone said to have been found in the head of a toad, and hence vulgarly called *toadstone*.

BUG, a troublesome and disgusting insect that infests beds, &c. It is the *cimex lectularius* of Linnæus. The destruction of bugs may be effected by a solution of corrosive sublimate in water, or in water and alcohol. This solution should be applied with a brush to every crevice where it is possible the insects can lodge.

BU'GLOSS, in botany, a name given to several very distinct genera of plants, as the anchusa, lycopsis, and asperugo.

BUHR'STONE, or BURR'STONE, a sub-species of silex or quartz, occurring in amorphous masses, partly compact, but containing many irregular cavities. It is used for millstones.

BUL, in the ancient Hebrew chronology, the eighth month of the ecclesiastical, and the second of the civil year; it has since been called Marshevan, and answers to our October.

BULB, or BULBOUS ROOT, in the anatomy of plants, expresses a root of a round or roundish figure, and usually furnished with fibres at its base. The bulb under ground is what the bud is upon the stem or branches, an hybernacle or winter receptacle of a future plant, containing the plant in embryo, protected by a rind of scales, &c. Bulbous roots are said to be *solid*, when composed of one uniform lump of matter,

as in the tulip; *tunicated*, when formed of multitudes of coats, surrounding one another, as in the onion; *squamose*, or *scaly*, when composed of lesser flakes, as in the lily; *duplicate*, when there are only two to each plant; and *aggregate*, when there is a congeries of such roots to each plant.

BULIM'IA, or BU'LIMY, a disease in which the patient is affected with an insatiable and perpetual appetite for food.

BULK'-HEADS, partitions made athwart a ship, by which one part is divided from another; as the great cabin, gun-room, bread-room, &c.

BULL, in zoology, the male of the bovine genus of quadrupeds, of which cow is the female.——In astronomy, the constellation Taurus.——Also, an edict or mandate issued by the Pope, and sealed with the bulla, a leaden or gold seal.

BUL'LA, in antiquity, a small round ornament of gold or silver, worn about the neck or breast of the children of the nobility till the age of fourteen.——In conchology, a genus of testaceous animals, class *vermes*, order *testacea*.

BUL'LATE, in botany, an epithet for a leaf; *folium bullatum*, a leaf having protuberances on its surface resembling blisters.

BULL'-DOG, a dog of English breed, so called from his property of attacking the bull, whence he was formerly used in the cruel sport of bull-baiting.

BULL'ET, a leaden ball with which small fire arms are loaded,

BULL'ETIN, an official account of public transactions or matters of general interest.

BULL'-FIGHT, an entertainment formerly frequent in Spain and Portugal, at which wild bulls are encountered by men on horseback, armed with lances.

BULL'-FROG, a remarkable species of the frog in North America, so called because its voice resembles the distant lowing of an ox.

BULL'ITE, in conchology, a petrified shell, or the fossil remains of shells, of the genus *bulla*.

BULL'ION, uncoined gold or silver in the mass. Those metals are called so, either when smelted from the native ore, and not perfectly refined; or when they are perfectly refined, but melted down in bars or ingots, or in any unwrought body, of any degree of fineness.

BULL'S-EYE, a mark in the centre of a target, in the shape of a bull's eye, at which archers shoot by way of exercise.——In astronomy, Aldebaran, a star of the first magnitude in the constellation Taurus.——Among seamen, a small obscure cloud, ruddy in the middle, generally the immediate forerunner of a great storm at sea.——It is also the name given to the patent reflectors set into the posts or decks.

BUL'WARK, in fortification, a mound of earth capable of resisting cannon shot, and formed with bastions, curtains, &c.——The word is also used figuratively, as "the British navy is the nation's bulwark."

BUM'-BOAT, a sort of wherry used about harbours, to carry provisions, &c., for sale to ships lying at a distance.

BUNGALOW', an Indian name for a house with a thatched roof such as is peculiar to the country.

BUNT, a sea term, the middle part of a sail formed into a sort of bag, or hollow, that the sail may gather more wind.

BUN'TINE, or BUNT'ING, the thin woollen stuff of which the colours, or flags and signals, of ships are made.

BUNTING, in ornithology, a bird of the genus *emberiza*, remarkable for the shape of its bill, the sides of the upper mandible forming a sharp angle bending inwards towards the lower.

BUNT'LINES, small ropes fastened to cringles, which serve to force up the bunt of the sail for the better furling it up.

BUOY, a short piece of wood or close hooped barrel fastened by a rope to the anchor, to point out its situation. It is also a piece of wood or cork fastened by a chain, serving to point out dangerous places.——A *Life-buoy* is intended to keep a person afloat till he can be taken from the water. It should be suspended from the stern of the ship, and let go as soon as anybody falls overboard, and a light may be attached to it if the accident happens by night. It consists of two hollow copper vessels connected together, each about as large as an ordinary sized pillow, and of buoyancy and capacity sufficient to support one man standing upon them.

BU'PHAGA, or BEEF-EATER, in ornithology, a bird of the order *picæ*, found in Africa. It is so called, because it alights on the backs of cattle, and picks holes in them to get at the larvæ of the gad-fly, on which it lives.

BUPHTHAL'MUM, or OX-EYE, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. There are many species, and are all either annuals or shrubs. It takes its name from the resemblance which its flowers have to the eye of an ox.

BUPHTHAL'MUS, in medicine, a diseased enlargement of the eye.

BUPRES'TIS, in entomology, an insect of the coleopterous order, remarkable for the brilliancy of its colours, which emulate the polish of the finest metals; but it bites severely and has a nauseous scent.

BUR'DEN, the contents of a ship; or the number of tons which a vessel will carry.——*The burden of a song* is that part which is repeated at every verse or stanza.

BUREAU', in its primary sense is a cloth covering a table; next a writing-table; and afterwards used to signify the chamber of an officer of government, and the body of subordinate officers who labour under the direction of a chief. According to the parliamentary usage of France, the chamber of deputies is divided into nine bureaus, composed of an equal number of deputies designated by lot: and each bureau discusses all matters referred to it by the chamber separately.

BUR'GAGE, an ancient tenure in bo-

BULL-DOGS ARE MORE VICIOUS AND FEROCIOUS THAN ANY OF THE CANINE SPECIES, AND BITE ON THE SLIGHTEST PROVOCATION.

THE TERM "BUREAUCRACY" IS OFTEN APPLIED TO THOSE GOVERNMENTS IN WHICH THE BUSINESS OF ADMINISTRATION IS CONDUCTED BY "BUREAUS."

roughs, whereby the inhabitants, by custom, hold their lands, &c. of the king, or other superior lord of the borough, at a certain yearly rent. A dwelling house in a borough, was also formerly called a burgage.

BUR'GESS, an inhabitant of a borough, or one who possesses a tenement therein. In other countries, burgess and citizen are used synonymously; but with us they are distinguished, burgess being ordinarily used for the representative of a borough-town in parliament.

BUR'GLARY, in law, the breaking and entering the dwelling of another in the night, with the intent to commit some felony, whether the felonious intent be put in execution or not. The like offence committed by day, is called house-breaking.

BUR'GOMASTER, the chief magistrate of the great towns in Flanders, Holland, and Germany. The authority of a burgomaster resembles that of the Lord Mayor in London.

BURLET'TA, a light, comic species of musical drama, which derives its name from the Italian *burlare*, to jest.

BURN'ING, the action of fire on some pabulum, or fuel, by which the minute parts thereof are put into a violent motion, and some of them assuming the nature of fire themselves, fly off *in orbem*, while the rest are dissipated in form of vapour, or reduced to ashes.

BURN'ING-GLASS, a lens which unites the rays of light that fall upon it, in so narrow a space as to cause them to kindle any combustible matter coming in their way. The lenses used for this purpose are generally convex on both sides, by which the rays are brought upon a point with the greatest force, in consequence of the shortness of their focal distance.——*Burning Mirrors*, or *Speculæ*, are concave reflecting surfaces, which carry the rays of light by reflection to the common centre. Among the ancients, the burning mirrors of Archimedes and Proclus are famous. By the former, the Roman navy was set on fire and consumed, at the distance of a bow-shot; and by the latter, according to Zonaras, the navy of Vitellius, while besieging Byzantium, was burnt to ashes. By means of a mirror made by Villette, a French artist of Lyons, a sixpence was melted in seven minutes and a half: and a halfpenny in sixteen minutes. This mirror was 47 inches wide, and ground to a sphere of 76 inches radius; so that its focus was about 38 inches from the vertex. Its substance was a composition of tin, copper, and glass.

BU'RIN, an instrument used for engraving on copper or steel plates.

BURREL-SHOT, small shot, nails, pieces of old iron, &c. put into cases, to be discharged out of ordnance.

BUR'SÆ MUCO'SÆ, in anatomy, bags which secrete a mucous fat that serves to lubricate tendons, muscles, and bones, in order to render their motion easy.

BURSA'RII, in archæology, stipendiary scholars who lived upon the burse, or joint-stock of the college.

BURSE, BUR'SA, or BASIL'ICA, an exchange, or place of meeting for merchants to consult on matters of trade, and to negotiate bills of exchange.

BUSH-HARROW, an implement of husbandry for harrowing grass lands, and covering grass or clover seeds. It consists of a frame with three or more bars, in which bushes are interwoven.

BUSH'MEN, a name given by the Dutch to the wild and ferocious inhabitants of Africa, near the Cape of Good Hope.

BUS'KIN, a kind of high shoe, anciently worn by tragedians: also a sort of leather stocking serving the purpose of a boot.

BUST, or BUS'TO, in sculpture, denotes the figure or portrait of a person in relievo, showing only the head, shoulders, and stomach, the arms being lopped off. The stomach and shoulders are, strictly speaking, the bust. The term is also used by the Italians, for the *torso* or trunk of the body, from the neck to the hips.

BUS'TARD, a large species of fowl of the Grallic order. It runs fast, and takes flight with difficulty. It inhabits England, but the breed is nearly extirpated.

BUS'TUM, in antiquity, a funeral pile on which the dead bodies of the Romans used to be burnt. Hence BUSTUA'RII were gladiators who fought about the bustum of any person in the celebration of his obsequies.

BUTCH'ER-BIRD, a species of the *shrike*, remarkable for its ferocity towards the little birds which it kills.

BUT'TER, a fat unctuous substance, procured from the cream of milk by churning. This kind of oil, in its natural state, is distributed through all the substance of the milk in very small particles, which are interposed between the caseous and serous parts, among which it is suspended by a slight adherence, but without being dissolved. It is in the same state as that of oil in emulsions; hence the same whiteness in milk and in emulsions; and hence, by rest, the oily parts separate from both these liquors to the surface, and form a cream. It was late before the Greeks appear to have had any notion of butter; their poets make no mention of it, and yet are frequently speaking of milk and cheese. The Romans used butter no otherwise than as a medicine, never as a food.——Butter is a name given in old books of chemistry to several metallic muriates, on account of their texture when newly prepared. Hence there are the butters of antimony, arsenic, bismuth, and tin. Thus, butter of antimony is a compound of antimony and oxygenized muriatic acid, and is a muriate of antimony, and so of the rest.

BUT'TERBUR, a plant with a floscular flower, consisting of many florets.

BUT'TERFLY, or PAPIL'IO, a genus of insects, of which there are many hundred species. Curious and elegant as they are, this is the last state of the varied existence of the same creature; first in the grub, or

BY THE ACTION OF POWERFUL BURNING-MIRRORS, WATER WILL IMMEDIATELY BOIL AND WOOD BURST INTO A FLAME IN A MOMENT.

A GLASS LENS, THREE FEET IN DIAMETER, AND ITS OTHER PARTS IN PROPORTION, FUSED PURE GOLD, PLATINA, AND CAST-IRON IN THREE SECONDS.

GILT BUTTONS ARE STAMPED OUT FROM COPPER, ALLOYED WITH ZINC.

caterpillar form, in which it emerges from the eggs laid by a former generation: the grub then passes into an insensible state, called the chrysalis or aurelia, in which it continues some weeks or months, having neither legs, wings, nor motion: at length the case is burst, and moths and butterflies emerge, which pass a short and fluttering existence, during which they lay eggs for future successions of the same kind.

BUTTER-MILK, a kind of serum that remains behind, after the butter is made.

BUTTER-WORT, in botany, the English name of a distinct genus of plants, called *pinguicula*.

BUTTERY, a room in the houses of noblemen and gentlemen, belonging to the butler, where he keeps the utensils belonging to his office.

BUTTOCK *of a ship*, is that part of her, which is her breadth right a-stern, from the tack upwards; and a ship is said to have a broad or a narrow buttock, according as she is built, broad or narrow at the transom.

BUTTONS. The manufacture of buttons is an art which gives employment to numerous persons, and constitutes many distinct trades. The most durable and ornamental buttons are made of various metals, generally polished, or covered with an exceedingly thin wash of some more valuable metal, as gold, silver, or tin. Horn, leather, bone, and wood are also used for buttons, which are sometimes plain, but more frequently covered with silk, mohair, thread, or other ornamental materials. It is impossible, consistent with our limits, to describe the processes by which the various kinds of buttons are made: and it must suffice to state that there is no kind of manufacture whatever in which greater ingenuity is exercised, nor in which the labours of the artisan have been crowned with more complete success.

BUX'US, the box-tree, of which there are three species: 1. the *arborescens*, with oval leaves; 2. the *angustifolio*, with narrow leaves; 3. the *suffruticosa*, commonly used for bordering of flower-beds. The two first sorts, when suffered to grow in a natural manner, are deciduous shrubs of a very elegant figure. There were formerly large trees of these kinds upon Boxhill, near Dorking in Surry. Boxwood is extremely hard and smooth, and therefore capable of being wrought with great neatness by the turner. It is used for the same reasons by engravers on wood.

BU'ZE, a wooden or leaden pipe to convey the air into mines.

BY'-LAWS, or BY'E-LAWS, private and peculiar laws for the good government of a city, court, or other community, made by the general consent of the members. All by-laws are to be reasonable, and for the common benefit, not private advantage of any particular persons, and must be agreeable to the public laws in being.

BUZ'ZARD, a rapacious, but sluggish bird, of the hawk kind.

BYS'SOLITE, a scarce mineral, occuring in very delicate filaments, short, flexible, and elastic. The colour is olive green, and their lustre rather silky.

BYS'SUS, in botany, a genus of mosses, consisting of plain, simple, capillary filaments. The byssi are nearly allied to the confervæ; from which, however, they differ, as consisting of finer, shorter, and more tender filaments, and not growing in water, as the confervæ do.——Byssus, a fine linen among the ancients, procured from India. Also, that fine Egyptian linen, whereof the tunics of the Jewish priests were made.

BYZAN'TINE, a gold coin of the value of 15*l.* so called from being coined at Byzantium. Also an epithet for any thing pertaining to Byzantium, an ancient city of Thrace, situated on the Bosphorus.

C.

C, the third letter, and second consonant of the alphabet, is pronounced like *k* before the vowels *a*, *o*, and *u*, and like *s* before *e*, *i*, and *y*. Before *h* it has a peculiar sound, as in chance, chalk; in chord and some other words, it is hard like *k*; but in many French words it is soft before *h*, like *s*, as in chaise, chagrin, &c. As a numeral C stands for 100, and CC for 200, &c.; as an abbreviation it stands for Christ, as A.C. Anno Christi, or Ante Christum; also for Companion, as C.B. Companion of the Bath. And in music, C after the cliff, is the mark of common time.

CAA'BA, or CAA'BAH, properly signifies a square building; but is particularly applied by the Mahometans to the temple of Mecca, built, as they pretend, by Abraham, and Ishmaël his son. It is towards this temple they always turn their faces when they pray, in whatever part of the world they happen to be. This temple enjoys the privilege of an asylum for all sorts of criminals; but it is most remarkable for the pilgrimages made to it by the devout Mussulmans, who pay so great a veneration to it, that they believe a single sight of its sacred walls, without any particular act of devotion, is as meritorious, in the sight of God, as the most careful discharge of one's duty, for the space of a whole year, in any other temple.

CAA-A'PIA, in botany, the Indian name for the *Dorstenia Braziliensis* of Linnæus, with which the natives cure the wounds inflicted by poisoned arrows.

BUTTON-SHANKS ARE MADE BY HAND FROM BRASS OR IRON WIRE, WHICH IS LAPPED SPIRALLY ROUND A PIECE OF STEEL BAR.

THE SHANKS OF PLATED BUTTONS ARE SOLDERED ON WITH SILVER SOLDER, AND SEPARATELY HEATED BY MEANS OF A BLOWPIPE.

PLATED BUTTONS ARE STAMPED BY THE FLY-PRESS, OUT OF COPPER-PLATE.

A PATENT WAS OBTAINED IN 1808 BY MR. SLATER, A SURGEON IN THE NAVY, TO SUBSTITUTE "IRON CABLES" FOR CORDAGE IN THE SEA-SERVICE.

CAA-O'PIA, in botany, the *Hypericum baccíferum*, a Brazilian tree, the bark of which emits a juice which when dried resembles gamboge.

CAB, an oriental dry measure, equal to nearly three English pints corn measure.

CABAL', denotes a number of persons united in some close design, and is sometimes used synonymously with *faction*. This term was applied to the ministry of Charles II., from the initial letters of their respective names, viz. Clifford, Ashley, Buckingham, Arlington, and Lauderdale.

CAB'ALA, a mysterious kind of science pretended to have been delivered by revelation to the ancient Jews, and transmitted by oral tradition to those of our times; serving for the interpretation of the books both of nature and scripture.

CAB'ALLINE, (from *caballus*) pertaining to a horse; as, *caballine* aloes, so called from its being a medicine given to horses.

CAB'BAGE-TREE, the cabbage-palm, a species of Areca, which grows with a straight stem to the height of 180 or 200 feet. Its branches grow in a circular manner, and on the top grows a snow-white substance, called cabbage, which is eaten with meat, like other vegetables. The fibres of the leaves are used for making nets and cordage.

CAB'IN, the apartment in a vessel for the officers and superior passengers.——*Cabin passengers* are those who pay for accommodations in the cabin, in distinction from deck or steerage passengers.

CAB'INET, a select apartment set apart for writing, studying, or preserving any thing that is precious. Hence we say, a cabinet of paintings, curiosities, &c.——Also, the closet or private room in the royal palace, where councils are held; likewise the ministers of state who are summoned to attend such councils.

CABI'RI, certain deities greatly venerated by the ancient Pagans in Greece and Phœnicia, who were supposed to have a particular influence over maritime affairs.

CA'BLE, a large strong rope or chain, used to retain a vessel at anchor. In the use of the cable there are many sea phrases.

CABO'CHED, or CABO'SSE, in heraldry, having the head cut close, so as to have no neck left.

CABOO'SE, the cook-room or kitchen of a ship. It also signifies the box that covers the chimney of a ship.

CAB'URE, a Brazilian bird of the owl kind, of a beautiful brown colour spotted with white.

CACA'DE, a French military term for an unlucky enterprise in war, which has been ill-concerted and ill-conducted.

CACA'LIA, a genus of plants in the Linnæan system, class 19 *Syngenesia*, order 1 *Polygamia æqualis*.

CACH'ALOT, in ichthyology, the Physeter, or spermaceti whale.

CACH'OLONG, in mineralogy, a subspecies of quartz, which often envelopes common chalcedony, the two minerals being united by insensible shades.

CACOCHYLI'A, in medicine, a bad chylification; when the humour called chyle is not duly made.

CAC'OCHYMY, a vicious state of the vital humours, especially of the blood, arising from a disorder of the secretions or excretions, or from contagion.

CACOE'THES, an ill habit or propensity; as the *cacoethes scribendi*, an itch for authorship.

CAC'OPHONG, in rhetoric, an uncouth, bad tone of the voice, proceeding from the ill disposition of the organs.

CACOSYN'THETON, in grammar, an improper selection and arrangement of words in a sentence.

CACOT'ROPHY, in medicine, any sort of vicious nutrition.

CAC'TUS, in botany, a genus of succulent plants, permanent in duration and singular in structure, which are all natives of South America. Most of this genus are now to be met with in the choice collections of exotics reared in this country.

CAD'DIS, a kind of worm or grub found in its case of straw.

CA'DENCE, in grammar, the fall of the voice; also the flow of verses or periods.——In music, it is a pause or suspension at the end of an air, or at the termination of a proper chord.——In dancing, cadence is used when the steps follow the notes and measures of the music.——In horsemanship, the cadence is the measure or proportion observed by a horse in all his motions.

CA'DENT, in astrology, an epithet for a planet when it is in a sign opposite to its exaltation.

CADEN'ZA, in music, the fall or modulation of the voice in singing; or the close of an air.

CADET', one who is trained up for the army by a course of military discipline; such as the cadets at the military colleges of Woolwich, Addiscombe, &c.——CADETSHIP, the commission given to a cadet to enter the East India Company's service.

CA'DI, a civil judge or magistrate in the Turkish empire.

CAD'MIA, an oxyde of zinc which collects on the sides of furnaces where zinc is sublimed.

CADMI'TES, in mineralogy, a precious stone having blue specks in it.

CAD'MIUM, a ductile and malleable metal, chiefly found in Silesia, in ores of zinc. It has the colour and lustre of tin, and is susceptible of a fine polish.

CADU'CEUS, the wand or sceptre of Mercury, being a rod entwisted by two serpents, and tipped with wings; borne by that deity as the ensign of his office. When used on medals, &c. it is an emblem of peace, and was carried by the Roman heralds when they went to proclaim peace. The rod signified power; the serpents, wisdom; and the wings, diligence and activity.

CADU'COUS, in botany, denotes falling early; as, *caducous* leaves, which fall before the end of summer.

CÆ'CIAS, a northerly wind, which is

SOME FLOWERS, LIKE THE "CACTUS GRANDIFLORUS" OR NIGHT-BLOWING CEREUS, HAVE NO SCENT BY DAY, BUT IN THE EVENING EMIT THEIR ODOUR.

said to be distinguished from the other winds by its drawing the clouds to itself.

CÆCIL'IA, in zoology, a genus of animals, class *Amphibia*, order *Serpentes*.

CÆRITES TAB'ULÆ, in antiquity, tables or registers in which the censors entered the names of those citizens, who for any misdemeanour were deprived of their right of voting at an election.

CÆ'SAR, in Roman antiquity, the family name of the first five Roman emperors, and afterwards adopted as a title by their successors. It was also used, by way of distinction, for the intended or presumptive heir of the empire.

CÆSA'RIANS, in Roman antiquity, officers or ministers of the Roman emperors, who kept an account of their revenues, and took possession in their name of such things as devolved or were confiscated to them.

CÆSU'RA, a figure in prosody, by which a division or separation takes place in a foot that is composed of syllables belonging to different words.

CÆT'ERIS PAR'IBUS, a term often used by mathematical and physical writers; the words literally signifying *the rest, or other things, being alike or equal*. Thus of a bullet, it may be said, *cæteris paribus*, the heavier it is the greater the range, supposing the length and diameter of the piece and the quantity and strength of the powder be the same.

CAG'UI, a Brazilian monkey, the smallest species of which is not more than six inches long.

CAIRNS, heaps of stones in a conical form, which are frequently to be met with in Scotland and Wales.

CA'ISSON, or CAISSOON', a wooden chest filled with bombs or powder, and laid in the way of an enemy, or buried under some work to blow it up. Also, the frame used in laying the foundations of a bridge.

CA'JEPUT OIL, in medicine, an aromatic oil extracted from an Indian tree; the *Maleleuca Leucadendron* of Linnæus, which grows in the Molucca islands.

CAL'ABASH-TREE, in botany, the *Crescentia* of Linnæus, the fruit of which is enclosed in a cell that serves the natives of the Caribbee islands for a drinking cup, a pot for boiling, and for various other domestic purposes.

CALAMAN'CO, a fine sort of woollen stuff of a fine gloss, and chequered in the warp, so that the checks are seen only upon one side.

CALAMA'RIÆ, the third natural order of plants in the Linnæan system, containing the reeds resembling grasses.

CAL'AMAR, a name of the cuttle-fish.

CAL'AMBAC, aloes-wood, a drug, the produce of a tree growing in China and some of the Indian isles.

CAL'AMBOUR, a species of the aloes-wood, used by cabinet-makers and inlayers.

CALAMIF'EROUS, a botanic term for plants having a long, hollow, knotted stem.

CAL'AMINE, or LA'PIS CALAMINA'RIS, the calamine stone, or oxyde of zinc; a kind of bituminous fossil earth, which, when mixed with copper, produces brass.

CAL'AMUS, a rush or reed used anciently as a pen to write on parchments or papyrus. ——The generic name of an Indian cane, otherwise called *rotang*.——Also, a kind of reed, or sweet-scented cane, used by the Jews as a perfume.

CALAN'DRA, in ornithology, a species of lark of a reddish brown colour.

CALASH', a light open chariot.

CAL'ATHUS, in antiquity, a basket or hamper, made of osiers or reeds, used to put needle-work in, or to hold flowers. Calathus was also a pan for cheese-curds and milk; also the name of a cup for wine used in sacrifices.

CALA'TOR, in antiquity, was a public servant and a freeman, such as a bailiff or crier, to summon courts, synods, and other public assemblies. He also attended on the priests in the sacrifices.

CAL'CAR, a kind of furnace, used in glass works for the calcination of sand and salt of potash.

CALCA'REOUS EARTH, or Lime; as marble, limestone, and gypsum, forming ranges of mountains, and containing marine shells and bones of animals, of which it is supposed to be the concentrated ruins.

CALCA'REOUS SPAR, crystallized native carbonate of lime.

CALCAVEL'LA, a sweet kind of Portuguese wine.

CAL'CEUS, in antiquity, a shoe, or whatever served as a covering for the foot. There were two sorts, the *calcei lunati*, which were worn by the patricians, so called from an ivory crescent with which they were ornamented, and the *calcei mulli*, or red shoes. They came up to the middle of the leg, but only covered the sole of the foot. They at first graced the feet of royalty, but on the abolition of the monarchy they were appropriated to those who had borne a curule office.

CALCIF'EROUS, producing calx or lime.

CALCINA'TION is the chemical process for the reduction of bodies to a pulverizable state, by the action of fire; or, the solution of a mixed body by the means of heat or any corroding substance, as mercury, aqua-fortis, &c., whereby it is reduced to powder.

CAL'CIUM, the metallic basis of lime.

CALCOG'RAPHY, an engraving after the manner of a drawing in chalk.

CALC'-SINTER, the incrustations of carbonate of lime upon the ground; also, the stalactites attached to the roofs of caverns.

CALC'-TUFF, an alluvial formation of carbonate of lime.

CAL'CULARY, a congeries of stony secretions found in the pulp of a pear and other fruits.

CALCULA'TION, the act of computing several sums by means of addition, subtraction, multiplication, division, &c., or an estimate formed in the mind by comparing the various circumstances which influence its determination.

CALCULATO'RES, accountants among

THE PRODUCTIVE POWERS OF THE CALICO-PRINTING-MACHINE ARE WONDERFUL, AMOUNTING IN SOME STYLES TO A MILE OF CLOTH PER HOUR.

the Romans, who used to reckon by means of little stones or pebbles.

CAL'CULUS, *(a stone)*, a name generally given to all hard concretions, not bony, which are formed in the bodies of animals. Calculi may be divided into two classes, according as they are found in the gall-bladder or in the urinary bladder: the first are called *biliary calculi;* the second, *urinary calculi.* The calculus in the bladder is called *lithiasis;* in the kidneys, *nephritis.* ——In mathematics, the *differential calculus* is the finding an infinitely small quantity, which, being taken infinite times, shall be equal to a given quantity.

CALDA'RIUM, in antiquity, a bath heated by means of steam.

CALEFA'CIENTS, in medicine, such preparations as have a tendency to stimulate the action of the blood.

CALEFACTION, a way of preparing simple or compound medicines by a moderate heat of the sun.

CAL'ENDAR, a register of time divided into months, weeks, and days throughout the year; together with an account of the festivals and other such matters as serve for the daily purposes of life. The Roman and Julian Calendars were used by the Romans; the Gregorian and Reformed Calendars among the moderns. It received its name from the Roman *calends*, which the first day of each month was called.

CAL'ENDER, a machine used in manufactories, to press stuffs, silks, linens, &c., to give them a fine gloss and wavy appearance. It consists of two thick rollers or cylinders, revolving so nearly in contact with each other that cloth passed through between them is not only smoothed, but glazed by their powerful pressure, and waved or watered, according to the pattern engraved on the revolving cylinders.

CALEN'DULA, the MARIGOLD, a genus of plants in the Linnæan system, class 19 *Syngenesia*, order 4 *Polygamia necessaria.* The species are perennials, annuals, and shrubs.

CAL'ENTURE, a violent ardent fever, incident to sailors in hot climates; the principal symptom of which is, their desire to rush into the sea, which, it is said, they imagine to be a green field.

CAL'IBER, the interior diameter of the bore of any piece of ordnance, or the diameter of a shot or shell.

CAL'IBER COMPASSES, a particular instrument used by gunners for measuring the diameters of shot, shells, &c. They resemble other compasses, except in their legs, which are arched, so that the points may touch the extremities of the arch.

CAL'ICO, cloth made of cotton. It is called *calico*, because originally brought from *Calicut*, a kingdom of India on this side of the Ganges, on the coast of Malabar. These cloths, whether plain, printed, dyed, stained, or painted, chintz, or muslins, are all included under one general denomination.

CAL'ICO-PRINTING, is the art of impressing cotton cloth with topical dyes. It has been for many centuries practised by the oriental methods in Asia and the Levant, but it was unknown in this country till the end of the 17th century. In speaking of the superiority of our present improved cylindrical machinery for calico-printing, Dr. Ure says, "the economy of labour introduced by these machines is truly marvellous; one of them, under the guidance of a man to regulate the rollers, and the service of a boy, to supply the colour troughs, being capable of printing as many pieces as nearly 200 men and boys could do with blocks. The perfection of the engraving is most honourable to our artisans. The French, with all their ingenuity and neat-handedness, can produce nothing approaching in excellence to the engraved cylinders of Manchester,—a painful admission, universally made to me by every eminent manufacturer in Alsace, whom I visited in my late tour."

CAL'IDUCT, in antiquity, a pipe or canal disposed along the walls of a house for conveying heat from a furnace to the various apartments.

CAL'IGA, in antiquity, a sort of sandal worn by the Roman soldiers, whence Caligula derived his name. These *caligæ* were sometimes adorned with gold and silver nails.

CALIGA'TION, dimness of sight, caused by an opacity of the anterior surface of the crystalline lens; or incipient cataract.

CA'LIN, a compound metal of lead and tin, of which the Chinese make tea-canisters, &c.

CA'LIPH, the chief sacerdotal dignity among the Saracens or Mahometans, vested with absolute authority in all matters relating both to religion and policy. It is at this day one of the Grand Signior's titles, as successor of the Prophet; and of the Sophi of Persia, as successor of Ali. The government of the original Caliphs continued from the death of Mahomet till the 655th year of the hegira.

CALK'ING, or CAULK'ING, the driving oakum or old ropes untwisted into the seams of a ship, to prevent their leaking or admitting water: after which they are covered with hot melted pitch or resin.——In painting, the covering of the back side of a design with red chalk, and tracing lines through on a waxed plate or wall, so as to leave an impression of the colour there.

CALK'INS, in farriery, the prominent parts at the extremities of a horse-shoe, bent downwards and forged to a sort of point.

CALL OF THE HOUSE, a parliamentary term implying an imperative call or summons, sent to every member on some particular occasion.

CALLION'YMUS, in the Linnæan system of fishes, the various species of *Dragonet.*

CALLI'STIA, in Grecian antiquity, a Lesbian festival, at which the women presented themselves in Juno's temple, in order that the prize might be assigned to the fairest. There was a similar festival of

BEFORE CALICO CAN RECEIVE GOOD FIGURED IMPRESSIONS, ITS SURFACE MUST BE FREED FROM FIBROUS DOWN AND MADE SMOOTH BY CALENDERING.

Ceres Eleusinia, among the Parrhasians; and another among the Eleans, where the most beautiful man was presented with a complete suit of armour, which he consecrated to Minerva; to whose temple he walked in procession, being accompanied by his friends, who adorned him with ribbons, and crowned him with a garland of myrtle.

CALLO'SUM COR'PUS, in anatomy, a medullary prominence in the brain, seen when separating the two lateral parts of the cerebrum.

CAL'LUS, the new growth of osseous matter between the extremities of fractured bones; or any dense, insensible knob or horny substance on the skin.

CALODEN'DRUM, a fine shrub, native of the Cape of Good Hope.

CAL'OMEL, in medicine, the submuriate of mercury, a preparation of mercury by sublimation or precipitation.

CALOR'IC, the principle or cause of heat, as distinguished from the sensation.

CALORIM'ETER, an instrument for measuring the heat given out by a body in cooling.

CAL'ORIMOTOR, a galvanic instrument, in which the calorific effects are attended by scarcely any electrical power.

CALO'TE, a sort of skull cap worn by the French cavalry under their caps, as a guard against the blows of the sabre.

CAL'VINISM, the theological tenets of John Calvin, who, in the 16th century, flourished at Geneva, where his doctrines still subsist. The doctrinal parts of this system differ from that of other reformers of Calvin's period, chiefly in what regards the absolute decrees of God, by which, according to this teacher, the future and eternal condition of the human race was predetermined: in other words, Calvin denied the free agency of man, and maintained predestination.

CAL'UMET, a symbolical instrument of great importance among the Indians of America. It is a smoking-pipe, the bowl of which is generally made of a soft red marble, and the tube of a very long reed, ornamented with feathers. This instrument, the use of which bears a great resemblance to the caduceus of the Greeks, is a pledge of peace and good faith. The calumet of war, differently made, is used to proclaim war.

CALX, a kind of fine friable powder which remains of metals, minerals, &c., after they have undergone the violence of fire, and have lost all their humid parts. From being combined with oxygen, metallic calxes are heavier than the metal from which they are produced.

CALYCAN'THEMA, the 17th practical Linnæan order of plants, the corolla and stamina inserted in the calyx.

CALYCIF'LORÆ, the 16th Linnæan natural order of plants; the stamina inserted in the calyx, as the wild olive, &c.

CALY'CIFORM, in botany, an epithet for the involucrum when it has the appearance of a calyx.

CALYCIS'TÆ, an appellation given by Linnæus to those botanists who have classed plants according to the different structure of the calyx or flower-cup.

CAL'YCLE, in botany, a diminutive of calyx, a row of small leaflets placed at the base of the calyx on the outside.

CALYP'TRA, in botany, a thin membranaceous involucrum, or cowl, usually of a conic figure, which covers the parts of fructification. The capsules of most of the mosses have calyptræ.

CALYPTRAN'THES, a genus of plants, class 12 *Icosandria*, order 1 *Monogynia*. The species are shrubs, natives of the East and West Indies.

CA'LYX, in botany, a term for the empalement or flower-cup, or that part of a plant which surrounds and supports the other parts of the flower.

CA'MBRIC, a species of fine white linen, made of flax, said to be named from Cambray, in Flanders, where it was first manufactured.

CAM'BER-BEAM, in architecture, a beam cut hollow or archwise in the middle, commonly used in platforms.

CAM'BERED, an epithet for the deck of a ship, the flooring of which is highest in the middle: also when it is defectively so, or what is sometimes called broken-backed.

CAM'EL, in zoology, a genus of quadrupeds, of the order of *pecora;* distinguished from the rest by having no horns. The dromedary or Arabian camel has one hunch on the back, four callous protuberances on the fore legs, and two on the hind legs. The Bactrian camel has two hunches on the back. By the camel's power of sustaining abstinence from drink for many days, and of subsisting on a few coarse shrubs, he is peculiarly fitted for the parched and barren lands of Asia and Africa. The Arabians chiefly subsist on the milk of their camels; and without them they could neither carry on trade, nor travel over their sandy deserts.

CAMEL'LIA, in botany, a genus of the *monadelphia-polyandria* class of plants: the flower consists of five ovated petals, connected vertically at the base; the fruit is a turbinated, lignose, and furrowed capsule; the seeds are numerous and small.

CAM'ELOPARD, or GIRA'FFE. This animal, whose existence was at one time disputed, is a native of several parts of Africa, living in forests, and feeding on the leaves. This animal has two straight horns, without branches, six inches long, covered with hair, truncated at the end and tufted. The shoulders are of such a vast length, as to render the fore-part of the animal much higher than the hind part. The neck is very long, the head slender and elegant, and the colour of the body a dusky white, with large rusty spots. It is mild and inoffensive, and, in cases of danger, has recourse to flight for safety; but when obliged to stand on self-defence, it kicks its adversary.

CAMELOPAR'DALIS, in astronomy, a constellation, consisting of 32 stars, situ-

THE SENSATION OF HEAT BEING OFTEN MISTAKEN FOR THE CAUSE, THE WORD "CALORIC" IS NOW USED TO DENOTE THE LATTER.

A CAMEL'S FOOTSTEP IS PERFECTLY NOISELESS, ITS FEET BEING COMPOSED OF A SOFT ELASTIC SUBSTANCE, AND COVERED WITH HAIR.

ated between Cepheus, Perseus, Cassiopeia, Ursa Major and Minor, and Draco.

CAM'EO, or CAMA'IEU, a peculiar sort of onyx; also, a stone on which are formed various figures and representations of landscapes. The word is also applied to any gem on which figures may be engraved. ——The name of *camaieu* is likewise given to such paintings as have but one colour, where the lights and shades are made on a ground of gold or azure.

CAMERALIS'TICS, the science of finance or public revenue, comprehending the means of raising and disposing of it.

CAM'ERA LU'CIDA, an optical instrument, for the purpose of making the image of any object appear on the wall in a light room, either by day or night.——Also, an instrument for drawing objects in true perspective.

CAM'ERA-OBSCU'RA, or *dark chamber*, an optical machine or apparatus, in which the light being collected, and thrown through a single aperture, external objects are exhibited distinctly, and in their native colours, on any white surface placed within the machine.

CAMISA'DE, a French term for attacking or surprising an enemy by night. It obtained the name from the soldiers wearing their shirts over their other clothes, that they might be known to each other.

CAM'LET, a sort of stuff originally made of camel's hair and silk mixed, but now of wool and silk.

CAMP, the residence of an army resting in tents; or, the place and order of tents for soldiers in the field. On the continent of Europe tents are abolished, and the armies *bivouac* in the open air, or, if the time will allow it, lodge in huts built of branches, &c. In short, in the progress of the military art, camps have become more slight and simple, even with those who still continue to make use of them.

CAMPA'IGN, the space of time during which an army is kept in the field. A campaign is usually from spring to autumn; but sometimes armies make a winter campaign.

CAMPANA'CEÆ, one of Linnæus's natural order of flowers, including those that are bell-shaped, as the campanula, convolvulus, &c.

CAMPANOL'OGY, the art of casting bells, or of ringing them.

CAMPAN'ULA, or BELL FLOWER, a genus of plants, mostly perennials, and bearing a bell-shaped flower. Several sorts of the campanula are natives of Britain.

CAMPAN'ULATE, or CAMPAN'IFORM, in botany, an epithet for the corolla, calyx, &c., when either is bell-shaped.

CAM'PHOR, a white concrete crystalline substance, of an acrid bitter taste and a penetrating smell. It is extracted from the *laurus camphora*, a large tree growing wild in Borneo, Sumatra, &c. To obtain camphor, the tree is cut down, and divided into pieces, and the camphor is taken out; it being found in small whitish flakes in and near the centre of the tree. It is then repeatedly soaked, washed, and separated from all extraneous matter. Camphor is altogether volatile and inflammable, soluble in vinous spirits, oils, and mineral acids, but not in water, alkalies, or vegetable acids.——OIL OF CAMPHOR, an oil which is procured by the solution of camphor in nitric acid.

CAM'PHORATED, an epithet for any liquid mixed or impregnated with camphor.

CAMPHOROS'MA, a genus of plants, class 4 *Tetandria*, order 1 *Monogynia*; the species of which are mostly shrubs.

CAM'PION, in botany, the *Agrostemma* of Linnæus. The rose campion, or Agrostemma Coronaria, is a well-known garden flower.

CAM'PUS MAII, an anniversary assembly of our ancestors, held on May-day, when they confederated together for defence of the kingdom against all its enemies.

CAM'PUS MAR'TIUS, among the Romans, a field, by the side of the Tiber, where the youth exercised themselves in warlike exercises. It was so called, on account of a temple that stood on it, consecrated to the god Mars. The consuls, Brutus and Collatinus, made it the place for holding the comitia or assemblies of people, and, in after times, it was adorned with a great quantity of fine statues.

CAN'ADA BAL'SAM, a medicinal substance which is obtained from the *Pinus balsamea*.

CANAL', an artificial river, provided with locks and sluices, and sustained by banks and mounds.——In anatomy, a duct or passage in the body of an animal, through which any of the juices flow, or other substances pass.

CANA'RIUM AUGU'RIUM, in antiquity, a sacrifice among the Romans, of a red dog, for the purpose of appeasing the fury of the dog-star on the approach of harvest.

CANA'RY-BIRD, an elegant yellow singing bird much bred in England, brought originally from the Canary Islands, where it is of a white colour.

CANCELLA'RIA CU'RIA, in archæology, the court of Chancery.

CANCEL'LI, in architecture, trellis, or lattice-work, made of cross bars of wood or iron. Also, the balusters or rails encompassing the bar of a court of justice.

CAN'CER, in medicine, a hard ulcerous and exceedingly painful swelling, and generally seated in the glandulous parts of the body.——In astronomy, a constellation, and the fourth sign in the zodiac, which the sun enters on the twenty-first of June, thence called the summer solstice. ——CANCER, *tropic of*, a small circle of the sphere, parallel to the equator, and passing through the beginning of Cancer.

CAN'CRITE, a fossil or petrified crab.

CANDELA'BRA. Numerous domestic utensils intended for the purpose of holding lights, received this name by the ancients; while every variety of form and the most costly materials were occasionally put in requisition to produce candelabra of ex-

AN OPTICAL INSTRUMENT CALLED THE "CAMERA CLARA," HAS BEEN INVENTED TO SUPPLY THE DEFICIENCIES OF THE "CAMERA OBSCURA."

IN AN ORDINARY "CANAL," THE ASSISTANCE OF ONE DRAUGHT HORSE WITH A BOAT IS SUFFICIENT FOR EVERY THIRTY TONS WEIGHT.

CANDLES INCLINING THIRTY DEGREES FROM THE PERPENDICULAR, REQUIRE NO SNUFFING, AND GIVE A UNIFORM LIGHT.

quisite workmanship. But, with all their skill and labour, modern artists have greatly excelled them in lightness, grace, and utility.

CAN'DIDATE, a person who seeks or aspires to some public office. In the Roman commonwealth, the CANDIDATI were obliged to wear a white robe, during the two years of their soliciting for a place. This garment, according to Plutarch, they wore without any other clothes, that the people might not suspect they concealed money for purchasing votes; and also, that they might the more easily show to the people, the scars of those wounds they had received in fighting for the defence of the commonwealth.

CANDIDA'TI MILI'TES, an order of soldiers, among the Romans, who served as the emperor's body-guards, to defend him in battle. They were the tallest and strongest of the whole troops; and were called *candidati*, in consequence of being clothed in white.

CAN'DIIL, a measure of capacity in India, by which a ship's burden is estimated as it is by tons in Europe. A candiil is 500 cwt.

CAN'DLE-BERRY-TREE, the MYR'ICA CERIF'ERA, or wax-bearing myrtle; a shrub common in North America, from the berries of which a kind of wax or oil is produced of which candles are made.

CAN'DLEMAS DAY, the festival observed on the second of February, in commemoration of the purification of the Virgin Mary. It is borrowed from the practice of the ancient Christians, who on that day used an abundance of lights both in their churches and processions, in memory, as is supposed, of our Saviour's being on that day declared by Simeon "to be a light to lighten the Gentiles." In imitation of this custom, the Roman Catholics on this day consecrate all the tapers and candles which they use in their churches during the whole year.

CAN'DY, a preparation of sugar made by melting and crystallizing it several times.

CAN'DYTUFT, in botany, the *Iberis*, an annual that is cultivated in gardens, bearing a white or purple flower.

CANEPH'ORÆ, the noble Athenian virgins who carried the baskets at the festival of the Panathenæa of Minerva.

CANEPHO'RIA, in Grecian antiquity, a ceremony which made part of a feast celebrated by the Athenian virgins, on the eve of their marriage day.——CANEPHORIA is also the name of a festival of Bacchus, celebrated particularly by the Athenians, on which the young virgins carried golden baskets full of fruit. The baskets were covered, to conceal the mystery from the uninitiated.

CAN'FARA, a sort of ordeal by fire, as it once existed in this kingdom. The accused carried hot irons in his hands; and if he came off unhurt, he was deemed innocent.

CAN'ICA, a kind of wild cinnamon, resembling the clove in flavour.

CANIC'ULAR DAYS, commonly called dog-days, a certain number of days preceding and ensuing the heliacal rising of the *canicula*, or the dog star, in the morning. The Ethiopians and Egyptians began their year at the rising of the dog star, reckoning to its rise again the next year, which is called the *annus canarius*.

CANINA'NA, in zoology, a species of serpent in America; so called because it may be treated as familiarly as a dog.

CA'NIS, a genus of quadrupeds, class *Mammalia*, order *Feræ*. This genus comprehends animals that differ very essentially from each other in their habits, as the dog, the wolf, the fox, and the jackall. Our observations will only extend to the chief peculiarities of the dog, or *Canis familiaris*. They cultivate the society of men, and are but rarely found wild: they feed on flesh and farinaceous vegetables; they digest bones: they are extremely docile, affectionate, and vigilant in their intercourse with men: they have an aversion to strangers generally, and particularly beggars. They are capable of imitation and instruction, and in many instances seem endowed with a degree of intelligence more allied to human reason than to animal instinct.——CA'NIS, in astronomy, the name of two constellations in the southern hemisphere; namely, Canis Major and Canis Minor.

CAN'KER, a corroding disease which occurs frequently in fruit trees.——Also, a fungous excrescence in the feet of horses.

CAN'NEL-COAL, or CAN'AL-COAL, in mineralogy, the *Bitumen ampelites* of Linnæus; a hard, opaque, inflammable jet-black fossil coal, which burns with a bright white flame, like a candle. It is sufficiently solid to be cut and polished, and is often, like jet, made into trinkets. In the fire it decrepitates and breaks into angular fragments, leaving a strong or sooty residuum.

CAN'NEQUIN, white cotton cloth brought from the East Indies, made in pieces of about eight ells long.

CAN'NON, a piece of ordnance, or a heavy metallic gun for a battery, mounted on a carriage. Guns of this kind are made of iron or brass, and of different sizes, carrying balls from three or four to forty-eight pounds' weight. The explosion being directed by the tube, balls and missiles are carried to great distances with destructive force. In a field of battle they are often drawn by horses on light carriages, and are called field pieces, or flying artillery.

CANOE, (pron. *ca-noo'*) a small boat, made of the trunk of a tree, hollowed out by cutting or burning; and sometimes also of pieces of bark joined together. It is impelled by a paddle instead of an oar; and is used by the uncivilized nations in both hemispheres.

CA'NON, a law or ordinance of the church. The Canon Law consists of rules drawn from Scripture, from the writings of the ancient fathers, from the ordinances of councils, and the decrees of the pope——Also a dignitary of the church. Originally,

CANKER IN TREES IS CAUSED BY A SUPERABUNDANCE OF SAP, WHICH FORCES ITS WAY THROUGH THE BARK, AND IS CHECKED BY SUDDEN COLD.

THERE ARE DIFFERENT KINDS OF CANZONAS; AS THE "CANZONA ANACREONTICA," THE "CANZONA PINDARICA," AND THE "CANZONA PETRARCHESA."

canons were only priests, or inferior ecclesiastics, who lived in community, residing near the cathedral church to assist the bishop, depending entirely on his will, supported by the revenues of his bishopric, and living in the same house as his domestics or counsellors, &c. By degrees, these communities of priests, shaking off their dependence, formed separate bodies; in time they freed themselves from their rules, and at length ceased to live in a community.——*Canon of Scripture*, is that body of books of the Holy Scripture which serves for a rule of faith and practice.——In modern music, a *canon* is a kind of perpetual fugue, in which the different parts, beginning one after another, repeat incessantly the same air.——In mathematics, it is used for a general rule for resolving all cases of a like nature in geometry, algebra, &c.

CANON'ICAL, in ecclesiastical polity, signifies, agreeable to the canons of the church; as, *canonical hours*, or hours prescribed by the canons for prayers.

CANONIZA'TION, an act of the Romish church, by which it takes upon itself to rank a deceased person among the catalogue of its saints; but the act is preceded by beatification, and by an examination into the life and "miracles" of the deceased.

CAN'ONRY, or CAN'ONSHIP, the benefice filled by a canon. It differs from a prebend, inasmuch as a prebend may subsist without the canonicate; whereas a canonicate is inseparable from a prebend: again, the rights of suffrages, and other privileges, are annexed to the canonicate, and not to the prebend.

CANO'PUS, in astronomy, a star of the first magnitude in the rudder of Argo, a constellation of the southern hemisphere.

CAN'OPY, a magnificent covering raised over an altar, throne, chair of state, pulpit, &c. In figurative language the *sky* is called a canopy.

CANT, quaint or vulgar language, affected by particular persons or professions, and not authorized by established usage.——In architecture, a term expressing the position of any piece of timber not standing square.——*Cant moulding*, a moulding with a bevelled surface applied to the capitals of columns.——*Cant-timbers*, in ship-building, those timbers which are situated at the two ends of a ship, and *canted* or raised obliquely from the keel.

CANTAB'ILE, in music, a term applied to movements intended to be in a graceful and melodious style.

CANTAN'TE, in music, a term to denote the vocal part of the composition.

CANTA'TA, a song, or composition, intermixed with recitatives, airs, and different movements, chiefly intended for a single voice, with a thorough bass, though sometimes with other instruments.

CANTEEN', a public-house licensed in every barrack or fort to sell liquors. Also, a semi-cylindrical tin-case, carried over a soldier's knapsack, to carry his cooked victuals in.

CANTHAR'IDES, in medicine, (the *Cantharis Vesicatoria*, or Spanish fly), are insects of the scarabæus, or beetle-kind: they are usually about half an inch in length, of a fine shining gold and green colour, but of a fetid smell. When bruised, they are universally used as a vesicatory, or blistering plaster. Taken internally, they act as the most energetic acrid poison; and though in some disorders this medicine is taken in small doses, as a powerful stimulant, its use requires the greatest caution on the part of the physician.

CANTHAR'IDIN, that peculiar substance existing in the cantharides, which causes vesication.

CAN'THARUS, in antiquity, a tankard sacred to Bacchus.

CAN'THI, in anatomy, cavities at the extremities of the eye-lids, commonly called the corners of the eye: the internal or greater canthus is next the nose; the external or lesser canthus near the temple.

CAN'TICÆ, ancient dramatic soliloquies, supposed to have been introduced as interludes.

CAN'TICLES, the Song of Songs, in the Bible, supposed to be a marriage song written by Solomon; to be explained by compositions of a similar nature in Eastern countries. By other writers it is supposed to be a series of sacred idyls, each distinct and independent of the other.

CANTILE'NA, in music, the treble melody, or upper part of any composition.

CAN'TO, a part or division of a poem, answering to what in prose is called a book. In Italian, *canto* is a song; and it signifies also the first treble, or highest vocal part.

CAN'TON, a small division: hence, in heraldry, a small square, separated from the rest of the coat, is called a *canton*.——In military affairs, troops billeted into different quarters or divisions, are said to go into *cantonments*.——In geography, a small district of territory, constituting a distinct state or government, as the cantons in Switzerland.

CAN'TONED, in architecture, is when the corner of a building is adorned with a pilaster, an angular column, rustic quoins, or anything that projects beyond the level of a wall.

CAN'VAS, a coarse sort of cloth, of which there are several kinds. Among others, are 1. That worked regularly in little squares as a basis for tapestry: 2. That which is called buckram: 3. The cloth used for pictures: And, 4. That employed for sails of ships, tents, &c.

CAN'ZONE, or CANZO'NA, in music, a song or air in two or three parts, with passages of fugue and imitation; but it is sometimes used for a kind of lyric poem, in Italian, to which music may be composed in the style of a cantata.

CANZONET', in music, a short song, in one or two parts.

CAOPO'IBA, in botany, a Brazilian tree, growing to the height and shape of a beech.

THE PINDARIC CANZONAS ARE DIVIDED INTO STROPHE, ANTISTROPHE, AND EPODE, AND ARE CALLED "CANZONA ALLA GRECA."

CAOUCHOUC, or CAOUTCHOUC, (pron. *coo-chook)* improperly called *elastic gum*, and more commonly *India rubber*, is obtained from the milky juice of several plants and trees, particularly from the syringe tree of Cayenne. Its elasticity is such that it can be stretched to a great extent, and its pliancy is increased by heat. From its softness, elasticity, and impermeability to water, it is used in the manufacture of many articles; and since it is easily dissolved by the purified naptha from coal tar, which forms a cheap and effectual solvent, and does not change its properties, the solution has been most extensively employed to give a thin covering to cloth, so as to render it impervious to moisture. It is also used for over-shoes, and when dissolved in oils forms a flexible varnish. Caouchouc is principally obtained from South America, and usually brought to Europe in the form of pear-shaped bottles, which are formed by spreading the juice over a mould of clay, then drying by exposure to the sun, or to the smoke of burning fuel: after which it is ornamented on the outside, and the clay in the inside is moistened with water, and picked out.

CAP, a part of dress made to cover the head. The use of caps and hats is referred to the year 1449, the first seen in Europe, being at the entry of Charles VII. into Rouen: from that time they began to take place of hoods or chaperons.——Cap, in architecture, the uppermost part of any assemblage of principal or subordinate parts.——In ship-building, *cap* is a square piece of timber, placed over the head or upper end of a mast.——In botany, the *pileus*, or top of the fungus, generally shaped like a plate or bonnet.——*Cap of maintenance*, one of the ornaments of state, carried before the kings of England at the coronation. It is of crimson velvet, faced with ermine. It is also frequently met with above the helmet, instead of wreaths, under gentlemen's crests. —— *Cap-a-pie*, (French) from head to foot.

CAPA″CITY, in a general sense, means the power of containing or holding.——In geometry, the solid contents of a body.——In chemistry, that state, quality, or constitution of bodies, by which they absorb and contain, or render latent, any fluid; as the *capacity* of water for caloric.

CAPE, in geography, a promontory or headland projecting into the sea farther than the rest of the coast, as the Cape of Good Hope, Cape St. Vincent, &c.

CA′PER, the bud of the caper-bush, much used for pickling. It grows in many parts of the south of Europe.

CA′PET, the name of the French race of kings, which has given 118 sovereigns to Europe, viz., 36 kings of France, 22 kings of Portugal, 5 of Spain, 11 of Naples and Sicily, 3 of Hungary, 3 emperors of Constantinople, 3 kings of Navarre, 17 dukes of Burgundy, 12 dukes of Brittany, 2 dukes of Lorraine, and 4 dukes of Parma.

CA′PIAS, in law, a writ of two sorts; one before judgment, to take the defendant; the other after, which is called the writ of execution.

CAP′ILLARY, in a general sense, an epithet given to things on account of their extreme fineness, or resemblance to hair. ——*Capillary Ores*, in mineralogy, the same with those otherwise denominated arborescent, or striated.——*Capillary Plants* are such plants as have no main stem, but whose leaves arise from the root, upon pedicles, and produce their seeds on the back of their leaves, as the fern, maiden-hair, &c.——*Capillary Tubes*, tubes of hair-like fineness, in which fluids ascend, owing to the pressure of the atmosphere being intercepted within the tube, by its sides, and being complete and unintercepted on the outside of the tube.——*Capillary Vessels*, in anatomy, the smallest and extreme parts of the minutest ramifications of the veins and arteries.

CAPILLA′IRE, a kind of syrup, extracted from maiden-hair.

CAPIL′LAMENT, in botany, a fine filament, like a hair, that grows in the middle of a flower, with a little knob at the top.

CAP′ITAL, in commerce, the fund or stock, in money and goods, of a merchant, manufacturer, &c., or of a trading company. ——*A floating capital* is that which remains after payment is made for all the apparatus and implements of the business.——*Fictitious capital* generally means nothing more or less than excessive credits, which throw the management and disposition of a great deal of property into the hands of persons who are not able to answer for the risks of loss from its bad management, or other causes.——Capital, in architecture, the uppermost part of a column or pilaster, serving as the head or crowning, and placed immediately over the shaft, and under the entablature.——Capital, in geography, the metropolis, or chief city or town of an empire, kingdom, state, or province.

CAPITAL PUNISHMENT. No subject has been more discussed, particularly of late years, than that by which the *right* and the *expediency*, assumed by governments, to inflict the penalty of death for offences against the safety and good order of society, is questioned; nor is there any subject whatever, perhaps, more deserving of the calm and dispassionate examination of philosophers and jurists. It has been ably, and, as we think, justly argued, that when the right of society is once admitted to punish for offences, it seems difficult to assign any limits to the exercise of that right, short of what the exigencies of society require. No government has the right to punish cruelly and wantonly: but still the discretion must be vested somewhere, to say what shall be the degree of punishment to be assigned to a particular offence. That discretion must be, from its nature, justly a part of the legislative power, and to be exercised according to the actual state of society. The very frequency of a crime must often furnish a very strong ground for severe punishment, not only as it furnishes proof that the present punish-

BY THE INDIANS, "CAOUTCHOUC" IS MADE INTO WATER-PROOF BOOTS, WHICH, WHEN SMOKED, HAVE THE APPEARANCE OF LEATHER.

CREDIT GIVEN TO INDUSTRY AND ENTERPRISE PRODUCES CAPITAL, AND CAPITAL IS THE TRUE AND VALID REPRESENTATIVE OF PROPERTY.

ment is insufficient to deter men from committing it, but from the increased necessity of protecting society against dangerous crimes. The right of government to inflict the punishment of death has been doubted by some distinguished persons; and the doubt is often the accompaniment of a highly cultivated mind, inclined to the indulgence of a romantic sensibility, and believing in human perfectibility. It is often said, that as life is the gift of God, it cannot be justly taken away, by human laws. True; life *is* the gift of God; but are not our personal endowments also the gift of God? has He not given man a right to personal liberty and locomotion—a right to eat and drink and breathe at large, as well as to exist?—yet no one doubts that, by way of punishment, he may be confined in a solitary cell; that he may be perpetually imprisoned or deprived of free air, or compelled to live on bread and water. But the *expediency* of capital punishment offers indeed a wide field for discussion. What may be strictly just, may not always be expedient; and a wise legislature will be slow in visiting with capital punishment any crimes but such as are in a high degree atrocious and dangerous to society, and which cannot otherwise be effectually guarded against. The bloodiest codes are not those which have most effectually suppressed offences; nay, men sometimes are hardened by the frequent spectacles of capital punishments, and in some degree grow indifferent to them; besides, no society can lawfully exercise the power of punishing, beyond what the just exigencies of that society require. On the other hand, a total abolition of capital punishments would, in some cases at least, expose society to the chances of deep and vital injuries. On a deliberate consideration of the subject, and on reference to the experience of most nations, it will probably be found, that capital punishment ought not wholly to be dispensed with; but that for any offences which are not of enormous magnitude, there exists no necessity or expediency for applying so great a severity. Much, however, must still depend upon the opinion and character of the age, the prevailing habits of the people, and upon the sound exercise of legislative discretion. In former times every species of torture was occasionally resorted to; burning the criminal at the stake, quartering him alive, breaking his limbs upon the wheel, crucifixion, exposure to the fury of wild beasts, and other savage punishments, were common in offences of an atrocious character, and more especially for those of a treasonable kind; but it is now allowed in nearly every civilized country, that the simple infliction of death is sufficient for the vengeance of the law, be the crime what it may. But upon the question whether executions ought to be in public or in private, a great diversity of opinion still exists. That public spectacles of this sort have a tendency to brutalize and harden the people—and that the courage and firmness with which the criminal often meets death, have a tendency to awaken feelings of sympathy, and to take away much of the horror of the offence, as well as of the punishment—may certainly be true. Yet, that such spectacles are the only means to bring home to the mass of the people a salutary dread and warning, may be true likewise. To which we ought to add, that if punishments were inflicted in private, it could never be known whether they were justly and properly inflicted upon the persons condemned; neither, indeed, could we be sure that innocent persons might not become the victims. Be this however as it may, we cannot but feel gratified that the dictates of humanity have lately triumphed over the barbarous relics of an undue severity: and that, to the credit of the age we live in, executions are far less frequent than they were; capital punishment for many kinds of felony, which a few years ago disgraced our criminal code, has at length been obliterated, and punishments of a milder nature substituted for it.

CAP'ITALIST, a man of large property, which either is or may be employed in trade.

CAP'ITATE, in botany, an epithet for a stigma which grows in the form of a hemisphere; and for a whorl, when the flowers stand so thick as to form a hemisphere.

CAPITA'TION, a tax or imposition raised on each person in consideration of his labour, industry, office, rank, &c. It is a very ancient kind of tribute, and answers to what the Latins called *tributum*, by which taxes on persons are distinguished from taxes on merchandise, called *vectigalia*.

CAP'ITE, in law, a sort of ancient tenure, whereby a man held lands of the crown, by knight's service or in socage.

CAP'ITO ANADRO'MUS, in ichthyology, a fish of the cod kind, living both in rivers and seas; so called on account of its great head.

CAP'ITOL, a castle, in ancient Rome, on the Mons Capitolinus, where there was a temple dedicated to Jupiter, in which the senate assembled; and on the same spot is still the city-hall or town-house, where the conservators of the Roman people hold their meetings. The foundations of the capitol were laid by Tarquin the elder, in the year of Rome 139: his successor Servius raised the walls, and Tarquin the Proud finished it in 221; but it was not consecrated till the third year after the expulsion of the kings, and establishment of the consulate. The capitol consisted of three parts, a nave, sacred to Jupiter; and two wings, the one consecrated to Juno, and the other to Minerva: it was ascended by stairs; the frontispiece and sides were surrounded with galleries, in which those who were honoured with triumphs entertained the senate at a magnificent banquet, after the sacrifices had been offered to the gods. Both the inside and outside were enriched with numerous ornaments, the most distinguished of which was the statue of Jupiter, with his golden thunder-bolt, sceptre, and crown.

THE PRESENT CAPITOL AT ROME (CAMPIDOGLIO), STANDING PARTLY ON THE SITE OF THE OLD ONE, WAS BUILT FROM A DESIGN OF MICHAEL ANGELO.

THE "CAPITE CENSI" WERE THE LOWEST CLASS OF ROMAN CITIZENS, WHO, HAVING NO PROPERTY, WERE COUNTED BY THEIR HEADS.

In the capitol also were a temple to Jupiter the guardian, and another to Juno; with the mint; and on the descent of the hill was the temple of Concord. This beautiful edifice contained the most sacred deposits of religion, such as the ancylia, the books of the sybils, &c.

CAP'ITOLINE GAMES. These were annual games instituted by Camillus, in honour of Jupiter Capitolinus, and in commemoration of the preservation of the capitol from the Gauls. There was also another kind of Capitoline games, instituted by Domitian, and celebrated every five years, at which rewards and crowns were bestowed on the poets, champions, orators, historians, &c.

CAPIT'ULA RURA'LIA, assemblies or chapters held by rural deans and parochial clergy within the precinct of every distinct deanery.

CAPIT'ULARY, the body of laws or statutes of a chapter, or of an ecclesiastical council.

CAPITULA'TION, in military affairs, a treaty made between the garrison of a place besieged and the besiegers, for surrendering on certain conditions. The term is also applicable to troops in any situation in which they are compelled to submit to a victorious enemy.

CAPIT'ULUM, in antiquity, a transverse beam in the military engines of the ancients, wherein were holes for the strings with which they were set in motion.——In botany, Capitulum denotes a mode of inflorescence, when several flowers form a kind of *head* or ball.——In anatomy, it means a small head, or protuberance of a bone received into the concavity of another.

CAPI'VI, a tree of Brazil, the flower of which resembles a rose. It grows to a great height, and yields the *balsam of capivi*.

CAP'NIAS, in mineralogy, a kind of jasper, of a smoky colour.——In botany, a vine which produces part white and part black grapes.

CAPONNIE'RE, in fortification, a covered lodgment placed in the glacis, at the extremity of the counterscarp; and in dry moats, with embrasures or loop-holes through which the soldiers may fire.

CAPO'TE, a large great coat, with a hood or cowl, which is sometimes worn by sentinels in bad weather.

CAP'PARIS, the Caper-bush, a shrub, the trunk and fruit of which, when pickled, are eaten. It is also used in medicine.

CA'PRA, the Goat, in zoology, constitutes a genus of quadrupeds, of the order *pecora*, distinguished from the other genera of this order, by their hollow, rough, and erect horns, which bend a little backwards. Of this genus authors enumerate a great many species, as the common goat; the *rupicapra*, or chamois-goat; the *ibex*; the *gazelle*; and several others

CA'PRÆ SALTAN'TES, in meteorology, exhalations or fiery meteors which sometimes appear in the atmosphere, assuming various irregular shapes.

CAP'REOLATE, in botany, having tendrils, or filiform spiral claspers, by which plants fasten themselves to other bodies, as in vines, peas, &c.

CAPREO'LUS, in anatomy, the helix of the ear.——In botany, the clasp or tendril of a vine or other plant.

CAPRIC'CIO, in music, the term for that irregular kind of composition in which the composer, without any restraint, follows the bent of his humour.——Capriccio'so denotes that the movement before which it is written, is to be played in a free and fantastic style.

CA'PRICORN, in astronomy, a southern constellation, and one of the twelve signs of the zodiac, which the sun enters on the 21st of December. *Tropic of Capricorn*, a small circle of the sphere, parallel to the equinoctial, passing through the beginning of Capricorn or the winter solstice, which is the sun's greatest southern declination, namely 23 degrees and a half.

CAPRIFICA'TION, a method used in the Levant for ripening the fruit of the domestic fig tree, by means of insects bred in that of the wild fig tree. The caprification of the ancient Greeks and Romans corresponds in every circumstance with what is practised at this day in the Archipelago, and in Italy. These all agree in declaring that the wild fig tree, *caprificus*, never ripened its fruit; but was absolutely necessary for ripening that of the garden or domestic fig tree, over which husbandmen suspend its branches.

CAP'RIOLES, in horsemanship, are those leaps which a horse makes in the same place without advancing, in such a manner that when he is at the height of the leap, he jerks out with his hind legs.

CAP'SICUM, a plant, native of South America, the fruit of which is a pod, and the strongest kind of pepper, known by the name of Cayenne Pepper.

CAP'STAN, in a ship, a strong massy column of timber, of the nature of a windlass, placed behind the mainmast, used for weighing, or raising up anchors, or any other purpose in which great power is required.

CAP'SULA, in chemistry, a sort of earthen pan, in which things are put that are to undergo a violent operation by fire.

CAPSULA'RES ARTERIÆ, in anatomy, the arteries of the renal glands; so called because they are enclosed by a capsule.

CAP'SULATED, in botany, enclosed in anything, as a walnut in its green husk.

CAP'SULE, the seed-vessel of a plant; it is composed of several elastic valves, which usually burst open at the points when the seeds are ripe; it differs from a pod, in being roundish and short.

CAP'TAIN, in the army, the commander of a company of foot or a troop of horse; and in the naval or merchant service, the commander of a vessel.——A *Captain-lieutenant* is an officer, who, with the rank of captain and pay of lieutenant, commands a company or troop.——A *Post-captain* in the British navy, is an officer commanding any

man-of-war, from a ship of the line down to a ship-rigged sloop.——A man eminently skilled in war or military affairs is styled a "*great captain*," as the Duke of Wellington.

CAP'TION, in law, the act of taking any person by any judicial process.

CAPUCHIN'S, an order of Franciscan friars in the Romish church, so called from their *capuche* or hood sewed to their habits, and hanging down their backs.

CAP'ULA, in antiquity, a wooden utensil with two handles for taking oil out of one vessel into another. The person who did this office was called the *capulator*.

CA'PUT, in anatomy, the HEAD, which is divided into the skull, *cranium*, and the face, *facies*. The skull consists of the crown, or *vertex*; the posterior part, or *occiput*; the anterior part or *sinciput*: and the temples, or *tempora*.——CAPUT OBSTIPUM, a wry neck, which is generally a spasmodic disorder.

CA'PUT MORTUUM, in chemistry, the inert residuum of any body, remaining after all the volatile and humid parts have been extracted.

CAR'ABINE, or CAR'BINE, a short gun used by the cavalry.

CARACA'RA, in ornithology, a Brazilian species of *falco*, the back of which is of a pale brown colour, variegated with spots of white and yellow. It is one of the most beautiful of the hawk kind, and about the size of a tame pigeon.

CAR'ACOLE, the half wheel which a horseman makes, either to the right or left. The cavalry make a caracole after each discharge, in order to pass to the rear of the squadron.

CAR'ACOLY, a mixture of gold, silver, and copper, of which are made rings and other ornaments, for bartering with savage tribes.

CAR'AGROUGH, a Turkish silver coin, weighing nine drachms.

CARAHUA'TA, in botany, the *Bromelia acana*, or aloe of Brazil, the concreted juice of which is supposed to be ambergris.

CA'RAITES, a sect among the Jews who adhere closely to the text and letter of the scriptures, rejecting the rabbinical interpretations and the cabbala.

CARAM'BOLA, in botany, *Malus Indica*, a tree growing in the East Indies which bears fruit thrice a year.

CAR'AMEL, sugar refined by repeated boiling. Also, ornaments made of sugar.

CARAN'NA, the gum or resin of the caranna tree, growing in South America.

CARAPA'CE, the shell of the turtle or tortoise.

CARAT, or CAR'ACT, the standard weight by which the fineness of gold is distinguished. If the gold be so fine that, in purifying, it loses nothing, or but very little, it is said to be gold of 24 carats; if it lose one carat, it is said to be gold of 23 carats.——CARAT, in weighing diamonds, &c., a weight of four grains.

CARAVAN', in the East, a company of travellers, and more particularly of merchants, who for their greater security, proceed in a body through the deserts of Arabia, or other region infested with robbers. Such a company often have more than a thousand camels to carry their baggage and goods; and as they walk in single file, the line is often a mile long. Proper officers are appointed to regulate every thing during their march, the chief of whom has the title of *Caravan-Bachi*.

CARAVAN'SERA, or CARAVAN'SERY, a large building or inn for the reception of travellers and the caravans. The building commonly forms a square, in the middle of which is a spacious court, and under the arches or piazzas that surround it, there runs a bank, raised some feet above the ground, where the merchants and travellers take up their lodgings, the beasts of burden being tied to the foot of the bank. In the upper part, there are generally private apartments, the use of which is costly. In many of them, however, the hospitality is gratuitous, it being by no means uncommon for a pious Mussulman to establish, during his life or by will, one or more of these caravanseries.

CAR'AWAY, a plant of the genus *Carum*, the seeds of which have an aromatic smell and a warm pungent taste. They are used in cakes, &c., and distilled with spirituous liquors.

CAR'BON, the pure or essential part of charcoal. Though this substance abounds throughout the vegetable kingdom, and is also contained in animal and even mineral bodies, yet it is very rarely to be met with in a state of absolute purity. It is indeed remarkable, and would be almost incredible if the results of modern chemistry did not render it indisputable, that the most valuable of all the gems, the diamond, is nothing but pure crystallized carbon. For many ages the diamond was considered as incombustible; and Newton was the first person who conjectured, from its great refractive power, that it was capable of combustion. By the union of carbon with oxygen, it produces two gaseous substances, the first of which was formerly called fixed air, now called carbonic acid; and the second, containing less oxygen, the oxyde of carbon.

CAR'BONATE, in chemistry, a compound formed by the combination of carbonic acid with different bases, as carbonate of copper, carbonate of lime, &c.

CARBON'IC ACID, in chemistry, a colourless, inodorous, elastic fluid, being a compound of carbon and oxygen in its gaseous state, called fixed air, or *carbonic acid gas*. It is one and a half times heavier than atmospheric air, and will, therefore, neither support animal life nor combustion. It is the gas which is generated by fermentative processes, and which so often proves destructive to persons who inhale it in mines, wells, or very confined apartments. All kinds of spring and well-water contain carbonic acid, which they absorb from the atmosphere, and to which they are partly indebted for their agreeable flavour; but the water which contains carbonic acid is

THE WATER OF SPRINGS IMPREGNATED WITH A LARGE PORTION OF "CARBONATE OF LIME" HAS A STRONG PETRIFYING QUALITY.

A CANDLE OR LAMP SMOKES, IN CONSEQUENCE OF ITS NOT PRODUCING HEAT ENOUGH TO EFFECT THE TOTAL COMBUSTION OF THE "CARBON."

wholly deprived of it by boiling.——*Carbonous acid*, is carbon not fully saturated with oxygen.

CAR'BUNCLE, in surgery, an inflammatory tumour, or painful gangrenous boil, which being seated deeply, in parts provided with cellular membrane, does not soon discover its whole dimensions, nor the ill-digested matter it contains——It is also the name of a very beautiful gem, of a deep red or scarlet colour, known to the ancients as the *anthrax*. When held up against the sun, it loses its deep tinge, and becomes exactly of the colour of burning charcoal, whence the propriety of the name they gave it. It has, however, been supposed by some modern mineralogists that the carbuncle of the ancients was garnet. ——CARBUNCLE, in heraldry, a charge or bearing, consisting of eight radii, four of which make a common cross, and the other four a saltier.

CARBUNCULA'TION, the blasting of the young buds of trees or plants, by excessive heat or cold.

CAR'BURET, in chemistry, a substance formed by the combination of carbon with metals, earth, or alkali.

CAR'BURETTED HY'DROGEN GAS, a substance formed of hydrogen and carbon, which on being duly excited, fires oxygen, and radiates light and heat, as in gas lights, and all other lights. The gas which is known by the name of the *fire-damp* among miners is pure carburetted hydrogen.

CAR'CANET, in archæology, a chain for the neck.

CAR'CASS, the body of a dead animal, especially a brute; that of the human species being called a corpse.——CARCASS, in building, the shell or timber work of a house before it is lathed and plastered or the floors laid.——In gunnery, an iron case or hollow vessel, of an oval figure, filled with combustible and other substances, to be thrown from a mortar into a town, to set fire to buildings. It has two or three apertures from which the fire blazes, and the light sometimes serves as a direction in throwing shells. It is furnished with pistol barrels, loaded with powder to the muzzle, which explode as the composition burns down to them.

CARCE'RES, in the ancient Circensian games, were inclosures in the circus, wherein the horses were restrained till the signal was given for starting, when, by an ingenious contrivance they all at once flew open.

CARCINO'MA, in medicine, a cancer; also, a turgescence of the veins of the eye.

CAR'DAMINE, in botany, a genus of plants in the Linnæan system, class 1 *Tetradynamia*, order 2 *Siliquosa*.

CAR'DAMOM, a perennial plant growing in the East Indies. The seeds are of an aromatic and pungent flavour, and are used as a stimulant.

CAR'DIALGY, sometimes called the *cardiac passion*, is the heart-burn, a violent sensation of heat and acrimony in the left orifice of the stomach, seemingly at the heart, but rising into the æsophagus.

CAR'DINAL, which in a general sense signifies principal or pre-eminent, is formed of the Latin word *cardo*, a hinge, agreeably with the common expression, in which it is said of an important matter that every thing *turns* upon it: thus Justice, Prudence, Temperance, and Fortitude are called the four *cardinal virtues*.——The *cardinal signs*, in astronomy, are Aries, Libra, Cancer, and Capricorn.——The *cardinal points* of the compass, north, south, east, and west.—— *Cardinal numbers*, in grammar, are the numbers, one, two, three, &c., which are indeclinable, in opposition to the ordinal numbers, first, second, third, &c.

CAR'DINAL, in the Roman hierarchy, an ecclesiastical prince and subordinate magistrate, who has a voice in the conclave at the election of a pope, and who may be advanced to that dignity himself. The dress of a cardinal is a red soutanne, a rochet, a short purple mantle, and a red hat; and his title of address, "His eminence."

CAR'DINAL-FLOWER, a plant of the genus *Lobelia*, of many species. They are fibrous-rooted perennials, from two to five or six feet high, with erect stalks, ornamented with spear-shaped leaves, and spikes of beautiful monopetalous flowers of scarlet, blue, and violet colours.

CARD'ING-MACHINE, an instrument of modern invention for combing, breaking, and cleansing wool and cotton. It consists of cylinders, thick set with teeth, and put in motion by the force of water, steam, &c.

CAR'DIOID, in mathematics, an algebraic curve, so called from its resemblance to a heart.

CAR'DITE, a fossil or petrified shell, of the genus *cardium*.

CARDS, pieces of pasteboard, of an oblong shape, painted or, rather, printed, of various figures, made into packs of 52 in number, and used by way of amusement in different games. They are divided into four kinds, viz. diamonds, hearts, clubs, and spades, and thirteen of each kind, so that an infinite variety of combinations may be formed with them, and games of chance thereby rendered highly interesting.

CAREEN'ING, in sea language, the bringing a ship to lie down on one side, in order to trim and caulk the other.

CAR'GO, the goods, merchandize, and effects which are laden on board a ship, exclusive of the crew, rigging, ammunition, provisions, guns, &c. The lading within the hold is called the *inboard cargo*, in distinction from horses, cattle, &c., carried on deck.

CAR'GOOSE, a fowl belonging to the genus *Colymbus*, called the Crested Diver.

CARI'BOO, in zoology, a quadruped of the stag kind.

CARICA, in botany, the Papau, a tree bearing a fleshy fruit of the size of a small melon.

CARICOUS, in medicine, an epithet given to tumours resembling a fig.

THE "CARBONIC ACID" IN THE ATMOSPHERE IS GREATER DURING THE DAY IN TOWN THAN IN THE COUNTRY, AND AT NIGHT THE REVERSE.

AS "CARBONIC ACID" IS ALWAYS PRODUCED BY THE RESPIRATION OF ANIMALS, CROWDED ASSEMBLIES ARE PREJUDICIAL TO HEALTH.

CAR'ILLONS, a species of chimes frequent in the Low Countries, particularly at Ghent and Antwerp, and played on a number of bells in a belfry, forming a complete series or scale of tones or semitones, like those of the harpsichord and organ.

CAR'INATED, in botany, shaped like the keel of a ship; applied to a calyx, leaf, or nectary.

CAR'LINE, a piece of timber in a ship, ranging fore and aft, from one deck beam to another, directly over the keel, and serving as a foundation for the body of the ship. ——*Carline Knees* are timbers lying across from the sides to the hatchway, and serving to sustain the deck.

CAR'LOCK, a kind of isinglass obtained from Russia, made of the sturgeon's bladder, and used in clarifying wine.

CAR'MELITES, an order of mendicant friars, very numerous in Italy and Spain. They wear a scapulary, or small woollen habit, of a brown colour, thrown over the shoulders.

CAR'MEN, a Latin term, used, in a general sense, to signify a verse; but in a more peculiar sense, to signify a spell, charm, form of expiation, execration, &c., couched in few words, placed in a mystic order, on which its efficacy was supposed to depend.

CARMIN'ATIVES, medicines which expel wind, promote perspiration, and are anti-spasmodic.

CAR'MINE, a pigment or powder of a deep red or crimson colour, procured from cochineal, and used for painting in miniature.

CARNA'TION, a beautiful sort of clove pink, having its bright colours equally marked all over the flowers.——In painting, flesh colour.

CARNE'LIAN, a precious stone, either red, flesh-colour, or white. The finest carnelians are those of the East Indies: there are some beautiful ones in the rivers of Silesia and Bohemia; and some of a quality not to be despised in Britain. The use to which they are most generally applied is that of seals.

CAR'NIVAL, the feast or season of rejoicing previous to Lent, celebrated with great spirit throughout Italy, when feasts, balls, operas, concerts, masquerades, &c., abound. The churches are filled with choristers, and the streets with masks. This festival flourishes more particularly at Venice, where it begins on the second holiday in Christmas, and where it boasts to have had at one time seven sovereign princes and thirty thousand foreigners among its votaries.

CARNIV'OROUS, an epithet applied to animals that feed on flesh.

CAR'OB-TREE, the *Cerotonia Siliqua*, a native of Spain, Italy, and the Levant. It is an evergreen, growing in the hedges, and produces long, flat, brown-coloured pods, filled with a mealy succulent pulp, of a sweetish taste. Though not accounted very wholesome, these pods are often eaten by the poorer classes in times of scarcity.

CAROLIT'IC COLUMNS, in architecture, columns with foliated shafts, decorated with leaves and branches winding spirally around them, or forming crowns and festoons.

CARO'LUS, a gold coin struck in the reign of Charles I. at that time valued at twenty shillings, but afterwards current at twenty-three.

CAROT'ID ARTERIES, in anatomy, two arteries in the neck, which convey the blood from the aorta to the brain.

CARP, in ichthyology, a species of Cyprinus, an excellent fish for ponds. These fishes breed rapidly, grow to a large size, and live to a great age.

CAR'PASUS, in botany, a highly poisonous herb, resembling myrrh.

CARPATH'ICUM, in medicine, a name for the fine essential oil distilled from the fresh cones of firs, &c.

CAR'PENTRY, the art of cutting, framing, and joining timber, in the construction of buildings: it is subservient to architecture, and is divided into *house-carpentry* and *ship-carpentry*.

CAR'PENTER'S RULE, a tool generally used in taking dimensions, and casting up the contents of timber and the artificer's work.

CARPE'SIUM, a genus of plants in the Linnæan system, class 19 *Syngenesia*, order 2 *Polygamia superflua*; one of the species of which is the well-known chrysanthemum.

CAR'PET, a sort of stuff wrought either with the needle or the loom, and used as a covering for the floor. Persian and Turkish carpets are the most costly; but a variety of other kinds are used, many of which are both elegant and durable.

CAR'POLITE, petrified fruits, the most remarkable of which are nuts converted into silex.

CAR'PUS, in anatomy, the wrist.

CAR'RACK, a large armed vessel employed by the Portuguese in the East India and Brazilian trade.

CARRA'GO, in the military art of the ancients, a barricade, made by carts and wagons, which the Gauls and other barbarous nations put in the way to impede the progress of an enemy.

CARRA'RA, a hard white kind of marble, somewhat resembling the Parian; so called from the town of Carrara, where it was found.

CAR'RICK-BITTS, in a ship, the bitts which support the windlass.——CARRICK-BEND, a particular kind of knot.

CARRONA'DE, a short piece of ordnance, having a large caliber, and a chamber for the powder, like a mortar.

CARRU'CA, in antiquity, a splendid kind of chariot, or car on four wheels, which were made of brass, ivory, silver, and sometimes of gold.

CARTE-BLANCHE, a blank paper, signed at the bottom with a person's name, and given to another person with permission to fill it up as he pleases; applied generally in the sense of unlimited terms being granted.

CARTE, in fencing, a thrust with a sword at the inside of the upper part of the body.

CAR'TEL, an agreement between two states for the exchange of their prisoners of war.——A *cartel-ship*, a ship commissioned in time of war to exchange the prisoners of any two hostile powers; also to carry any particular request from one power to another. The officer who commands her is ordered to carry no cargo, ammunition, or implements of war, except a gun for the purpose of firing signals.

CARTE'SIANS, those who adhere to the opinions of Des-Cartes. This philosopher has laid down two principles, the one metaphysical, the other physical. The metaphysical proposition is this; "I think, therefore I am:" the physical one, "Nothing exists but substance." Substance he makes of two kinds; the one a substance that thinks, the other a substance extended; whence actual thought and actual extension are the essence of substance.

CARTHAGIN'IAN, a native of ancient Carthage, or something pertaining to that celebrated city, which was situated on the northern coast of Africa, about twelve miles from the modern Tunis. It was founded by the Phœnicians, and destroyed by the Romans.

CAR'THAMUS, in botany, Wild or Bastard Saffron, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamia æqualis*.

CARTHU'SIANS, a religious order, founded in the year 1080, by one Bruno. They received their name from Chartreuse, the place of their institution. They are so remarkable for their austerity, that they never leave their cells except to go to church, nor speak to any person without leave.

CARTILAGE, or in common language *gristle*, a part of the animal body, harder and drier than a ligament, and softer than a bone; its use is to render the articulation of the bones more easy. Of the cartilages that unite the bones together, some join them so firmly, as to allow no sensible motion; and others, in such a manner, as to allow of different motions, as in those by which the bodies of the vertebræ are connected. The first grow easily hard, the other appear, in some measure, viscid, and retain their flexibility.

CARTILA'GINOUS FISHES, those having cartilaginous instead of bony skeletons. Many of these are viviparous, as the ray and shark; others oviparous, as the sturgeon. They are now subdivided into *Branchiostegi* and *Chondropterygii*.—— *Cartilaginous leaf*, in botany, a leaf surrounded with a margin, thicker than the rest, but composed of the same substance

CARTOON', a design drawn upon large sheets of paper for the purpose of being traced upon any other substance, where the subject is to be finished. The most celebrated cartoons in existence are those of Raphael, seven of which are at Hampton-Court, and were originally designed for tapestry.

CARTOUCH', a case of wood holding about four hundred musket balls, besides iron balls, from six to ten, to be fired out of a howitzer. Also, a portable box for charges. ——In architecture, *cartouches* are blocks or modillions used in the cornices of wainscoted apartments: also ornaments representing a scroll of paper.

CAR'TRIDGE, a case of paper or parchment filled with gunpowder, and used in the charging of guns. The cartridges for small arms, prepared for battle, contain the powder and ball: those for cannon and mortars are made of pasteboard or tin. Cartridges without balls are called *blank-cartridges*.——The *cartridge-box* is a case of wood covered with leather, with cells for cartridges, and worn upon a belt thrown over the left shoulder.

CAR'TULARY, or CHAR'TULARY, a register-book, or record, as of a monastery.

CAR'UCATE, in old deeds, as much land as one team can plough in a year.

CAR'UNCLE, in surgery, a small fleshy excrescence, either natural or morbid.

CARV'ING, the art of cutting wood into various forms and figures.

CARYAT'IDES, in architecture, columns or pillars shaped like the bodies of women, and in the dress of the Caryan people. They were erected as trophies, and intended to represent the Carian women who were taken captives by the Athenians. Other female figures were afterwards used in the same manner, but they were called by the same name.

CARYOPHYL'LEÆ, the 22nd Linnæan natural order of plants, containing the pink, carnation, &c.

CARYOPHYL'LEOUS, in botany, an epithet given to such flowers as have five petals with long claws, in a tubular calyx.

CASAR'CA, in ornithology, a fowl of the genus *anas*, called also Ruddygoose, met with in Russia and Siberia.

CASCA'DE, a small waterfall, either natural or artificial. The word is applied to such as are less than a cataract.

CASCAL'HO, a deposit of gravel, sand, and pebbles, in which the diamond is found.

CASCARIL'LA, in medicine, the word originally used to signify Peruvian bark, but which is now applied to the bark of the *croton cascarilla*, a very excellent tonic.

CASE, the particular state, condition, or circumstances that befal a person, or in which he is placed. Also, any outside covering which serves to enclose a thing entirely, as packing-cases, or knife-cases. In carpentry, the case of a door is the wooden frame in which it is hung. In printing, it is a frame of wood, with numerous small partitions for the letters.——CASE, in grammar, implies the different inflections or terminations of nouns, serving to express the different relations they bear to each other and the things they represent.——*Action on the case*, in law, is an action in which the whole cause of complaint is set out in the writ.

CA'SE-HARDENING, a method of preparing iron, so as to render its outer sur-

face hard, and capable of resisting any edged tool.

CA'SEIC-ACID, the acid of cheese, or a substance so called, extracted from cheese.

CA'SEMATE, in fortification, a vault of mason's work in the flank of a bastion, next to the curtain, serving as a battery to defend the opposite bastion, and the moat.

CA'SEMENT, a window that opens on hinges. Also, a hollow moulding.

CASE-SHOT, musket balls, stones, old iron, &c., put into cases and discharged from cannon.

CASH, money in hand, or ready money, distinguished from bills.

CASH'EW-NUT, the *Anacardium*, a West Indian tree, bearing a kidney-shaped nut. The fruit is as large as an orange, and full of an acid juice. To the apex of this fruit grows this nut, the shell of which is hard, and the kernel sweet.

CASHIER', a person who is entrusted with the cash of some public company. In a banking establishment the cashier superintends the books, payments, and receipts of the bank: he also signs or countersigns the notes, and superintends all the transactions, under the order of the directors.

CASK'ET, the diminutive of *cask*, a small chest or box, for jewels, &c.——In seaman's language, it signifies a small rope, used to fasten the sail to the yard in furling.

CASQUE, a piece of defensive armour, to cover and protect the head and neck in battle.

CASS'ADA, or CASS'AVA, in botany, a plant of the genus *jatropha*, of different species. The roots of the *manihot*, or *bitter cassada*, and of the *janippa*, are either made into a kind of bread, or roasted and eaten like potatoes by the natives of Africa and the West Indies. They yield also a great quantity of nutritive starch, which we know as the article called *tapioca*.

CASSA'TION, Court of, one of the most important institutions of modern France, which gives to the whole jurisdiction of that country coherency and uniformity, without endangering the necessary independence of the courts. It was established by the first national assembly, and has been preserved, in every essential respect, under all the changes of the revolution and restoration. It properly signifies the annulling of any act or decision, if the forms prescribed by law have been neglected or justice has been perverted.

CAS'SIA, (pron. *cashia*), in botany, a genus of the *decandria monogynia* class of plants. It is divided into three species; the *cassia fistula*, the *cassia lignea*, and the *cassia caryophyllata*. The first is the cassia of the shops, the soft fresh pulp of which is an excellent mild cathartic: it is given, with success, in inflammatory fevers, and in disorders of the breast, kidneys, and bladder. The cassia lignea, or cassia bark, much resembles the cinnamon: it is a stomachic and cordial, but possesses these virtues in a less degree than cinnamon; it is also used in the venice-treacle, mithridate, &c. The cassia caryophyllata, or clove bark, is a stomachic, carminative, and alexipharmic.

CAS'SIDA, a genus of insects, of the order of the *coleoptera*.

CAS'SIOBURY, in botany, a plant of the genus *cassine*, of which the most remarkable species is the Yapon of South America, whose berries are of a beautiful red colour.

CASSIOPE'IA, a constellation in the northern hemisphere, situated opposite the Great Bear, on the other side the pole. In the year 1572, a remarkable new star appeared in this constellation, surpassing Syrius or Lyra in brightness. It appeared larger than Jupiter, but after a few months it declined; and in a year and a half entirely disappeared.

CASSITE'RIA, a genus of crystals which appear to have an admixture of some particles of tin.

CAS'SOCK, the vestment worn by clergymen under their gowns.

CAS'SOWARY, in ornithology, a large bird of the genus *Struthio*, nearly the size of an ostrich, but with legs thicker and stronger. The wings are so small as not to appear, being hid under the feathers, and on the head is a kind of horny helmet. It runs with most surprising swiftness.

CAST, among artists, any statue or part of a statue, of bronze, or of plaster-of-Paris. A cast is that which owes its figure to the mould into which the matter of it has been poured or cast while in a fluid state; and thus differs from a model, which is made by repeated efforts with a ductile substance, as any adhesive earth; and from a piece of sculpture, which is the work of the chissel.

CASTANET'S, instruments formed of small concave shells of ivory or hard wood, fastened to the thumb and beat with the middle finger. The Spaniards and Moors use them as an accompaniment to their saraband dances and guitars.

CASTA'NEA, in botany, the fruit of the chesnut-tree.

CASTE, the general name for the tribes of various employment, into which the Hindoos are divided in successive generations, and generations of families. The first caste is religious; the second warlike; the third commercial; and the fourth labourers. Persons of the religious caste are universally denominated *bramins*; the soldiers or princes are styled *cuttery* or *rajahs*; the traders, *choutres* or *shuddery*; the lowest order, *parias*.

CASTELLAIN, in feudal times, the owner, lord, or governor of a castle or fortified place.

CAS'TELLANY, the lordship belonging to a castle; or the extent of its land and jurisdiction.

CA'STING, with founders, the running of metal into a mould: among sculptors, it is the taking casts or impressions of figures, &c. Plaster-of-Paris is the most usual material employed for this purpose.——In natural history, the word *casting* is used for that process by which some animals throw

THE SENTENCES OF THE "COURT OF CASSATION" ARE RECORDED IN THE JOURNALS OF THE OTHER COURTS, AND ALSO PUBLISHED IN A BULLETIN.

off their skins, horns, &c. when the old fall off to make room for the new.

CAS'TLE, a fortress or place rendered defenceable, either by nature or art.——English castles, walled with stone, and designed for residence as well as defence, are for the most part of no higher date than the Conquest. Those previously erected had been suffered to fall into ruin; and many writers have assigned this circumstance as a reason for the facility with which William the Norman made himself master of the country. It was the policy of this able general to build a considerable number; and in process of time the martial tenants of the crown erected them for themselves; so that towards the end of Stephen's reign, we are told that there existed upwards of eleven hundred. At this period castles were an evil of the greatest magnitude to both the sovereign and the subject; considerable struggles appear to have taken place with regard to their continuance; several were demolished; and their general decline commenced. A complete castle consisted of a ditch or moat, an outwork, called a barbican, which guarded the gate and drawbridge; an artificial mount; an outer and inner ballium or inclosure; and the keep, or lofty tower, in which the owner or governor resided, and under which were the dungeons.——*Castle-guard*, a feudal tenure, or knight service, which obliged the tenant to perform service within the realm, without limitation of time.——*Castle-ward*, an imposition laid upon subjects dwelling within a certain distance of a castle, for the purpose of maintaining watch and ward in the castle.

CAS'TOR, in zoology, the *Beaver*. Also, a reddish-brown substance, of a strong penetrating smell, taken from bags in the groin of the beaver: it is a powerful antispasmodic.

CAS'TORIN, or CAS'TORINE, in chemistry, an animal principle discovered in castor when boiled in alcohol.

CASTOR-OIL, in medicine, the oil of the *Ricinus*, or *Palma Christi*, a West Indian plant, and which is obtained from the nuts or seeds by expression or decoction. It is a mild and safe cathartic.

CASTRA'TION, in botany, the cutting off of the anthers, or the tops of the stamens of flowers, before the ripening of the pollen.

CAS'UISTRY, the science of resolving cases of doubtful propriety, or of determining the lawfulness or unlawfulness of any act, by rules and principles drawn from the Scriptures, from the laws of society, or from reason.

CA'SUS FŒD'ERIS, the case stipulated by treaty, or which comes within the terms of compact.

CA'SUS OMIS'SUS, in law, where any particular thing is omitted, and not provided for by the statute.

CAT, a well known domestic animal, of the feline genus, but sometimes wild in the woods, and large and ferocious.——CAT, a term for a ship usually employed in the coal trade.——Also a sort of strong tackle for drawing up the anchor.——It is also a military term for a kind of shed under which soldiers conceal themselves while filling up a ditch or mining a wall.

CATABAP'TIST, one who is averse to the Christian rite or ceremony of baptism.

CATACHRE'SIS, in rhetoric, a trope which borrows the name of one thing to express another. Thus Milton, in describing Raphael's descent from the empyreal heaven, says,

"Down thither prone in flight
He speeds, and thro' the vast ethereal sky
Sails between worlds and worlds."

So in Scripture we read of the "*blood* of the grape." A catechresis, in fact, is the abuse of a trope, or when a word is too far wrested from its original signification.

CAT'ACOMB, a grotto or subterraneous place for the burial of the dead. It is generally applied to a vast number of subterraneous sepulchres, in the Appian Way, near Rome; supposed to be the cells in which were deposited the bodies of the primitive Christian martyrs. But there are now many other catacombs, as at Paris, &c.

CAT'AMOUNT, in zoology, the wild cat, or cat of the mountain, of North America.

CATACLA'SIS, in medicine, a breaking or distortion in general; but particularly that of the eye.

CATACOUS'TICS, an appellation given to the doctrine of reflected sounds, called also *cataphonics*.

CATADRO'MUS, in antiquity, the stadium, or place where races were run.

CATAGMAT'IC, in anatomy, an epithet for that which has the quality of promoting the union of fractured bones.

CATALEP'SIS, or CAT'ALEPSY, a kind of apoplexy, in which the patient is speechless, senseless, and fixed in one posture, with his eyes open, though without seeing or understanding.

CATAL'PA, in botany, a South American tree, of the genus *bignonia*, or trumpet-flower, remarkable for its beautiful appearance when in blossom.

CATAMARAN', a sort of floating raft, originally used in China as a fishing boat.

CAT'APHRACT, in the ancient military art, a piece of heavy defensive armour, formed of cloth or leather, strengthened with scales or links, and used to defend the breast, or whole body, or even the horse as well as the rider.

CAT'APLASM, a poultice applied to some part of the body, to excite or repel heat, or to relax the skin, &c. When mustard is an ingredient, it is called a *sinapism*.

CATAPUL'TA, or CAT'APULT, in antiquity, a military engine used for throwing arrows, darts, and stones upon the enemy. Some of these engines would throw stones of a hundred weight. Josephus takes notice of the surprising effects of these engines, and says, that the stones thrown out of them beat down the battlements, knocked off the angles of the towers, and would level

ALL MODES OF TREATING "CATARACT" CONSIST IN REMOVING THE DISEASED LENS FROM ITS SITUATION OPPOSITE THE TRANSPARENT CORNEA.

a whole file of men, from one end to the other. The catapulta differed from the balista, inasmuch as the latter threw stones only, whereas the former threw chiefly darts and javelins.

CAT'ARACT, a great fall of water over a precipice in the channel of a river, caused by rocks or other obstacles stopping the course of the stream; as that of Niagara, the Nile, the Danube, and the Rhine.——Cataract, in medicine, an affection of the crystaline humour of the eye, or its capsule, which becomes so opaque as to prevent the rays of light from passing to the optic nerve. *Incipient cataract*, is only suffusion of sight when little clouds seem to float before the eye. *Confirmed cataract*, is when the apple of the eye is either wholly, or in part covered, so that the rays of light cannot pass to the retina. [For further information on this dreadful affliction, see "Stevenson on Cataract": and for an effectual cure, consult the author of that work.]

CATARRH', commonly denominated a *Cold*, is an increased secretion of mucus from the nose, fauces, and bronchiæ, with fever, cough, lassitude, &c. When a catarrh is epidemic, it is called the *influenza*.

CATAS'TASIS, in poetry, the third part of the ancient drama, being that wherein the intrigue, or action, is supported and carried on, and heightened, till it be ripe for unravelling in the catastrophe.

CATAS'TROPHE, in dramatic poetry, the fourth and last part in the ancient drama, or that immediately succeeding the catastatis; and which consists in the unfolding and winding up of the plot, clearing up difficulties, and closing the play.

CATCH, in music, is defined to be "a piece for three or four voices, one of which leads, and the others follow in the same notes." But perhaps it may be more correctly described as a fugue in the unison, wherein to humour some conceit in the words, or to give them a different meaning, the melody is broken, and the sense is interrupted in one part, and *caught* and supported by another.

CATCH'-FLY, a well-known plant, having grass-like leaves, and a long stalk terminated by a cluster of crimson flowers.

CAT'ECHISM, a form of instruction in religion, conveyed in questions and answers. The catechism of the Church of England originally consisted of no more than a repetition of the baptismal vow, the creed, and the Lord's prayer; but King James I. ordered the bishops to add to it a short and plain explication of the sacraments.

CAT'ECHIST, an officer in the primitive Christian church, whose business it was to instruct the catechumens in the first principles of religion, and thereby prepare them for the reception of baptism.

CAT'ECHU, or Terra Japonica, a gum of a very astringent quality, obtained by decoction and evaporation from a species of *Mimosa* in India. It consists chiefly of *tannin*.

CATECHU'MENS, a name formerly given in the Christian church, to such as were prepared to receive the ordinance of baptism. These were anciently the children of believing parents, or pagans not fully initiated in the principles of the Christian religion; and were admitted to this state by the imposition of hands and the sign of the cross.

CAT'EGORY, in logic, a series or order of all the predicates or attributes contained under a genus. The school philosophers distributed all the objects of our thoughts and ideas into certain genera or classes, which classes the Greeks called categories, and the Latins predicaments. Aristotle made ten categories, viz., substance, quantity, quality, relation, action, passion, time, place, situation, and habit.

CATE'NA, in a general sense, denotes a chain.——In anatomy, a name used by some for the muscle, more commonly called *tibialis anticus*.——Catena Patrum, in matters of literature, a book containing the sentiments of the ancient Christian fathers, with respect to their doctrines.

CATENA'RIA, or CAT'ENARY, in geometry, the curve which an extended rope forms by its own weight.

CAT'ERPILLAR, in entomology, the larva produced from the egg, which is transformed first into the chrysalis or nymph, and afterwards into the butterfly. Caterpillars generally feed on leaves or succulent vegetables, and are sometimes very destructive: they are furnished with several pairs of feet, and have the shape and appearance of a worm, variously coloured, and often hairy. It is well known, that all winged insects pass through a reptile state before they arrive at perfection: this great change from a worm to a butterfly was formerly esteemed a real metamorphosis of one animal to another; but later discoveries have put it beyond all doubt, that the embryo butterfly, with all the lineaments of its parent, is contained within the external cases or coverings of the caterpillar.

CAT'GUT, the name for the strings made of the intestines of sheep or lambs, used in musical instruments, &c. Great quantities are imported from Lyons and Italy.

CATHARTICS, medicines which cleanse the stomach and bowels by acting as purgatives.

CAT'-HEAD, in marine language, a strong beam projecting horizontally over a ship's bows.——*Cat-harpings*, ropes serving to brace in the shrouds of the lower masts behind their respective yards.——*Cat's paw*, a light air perceived in a calm, by a rippling on the surface of the water.

CAT'HEADS, two strong beams of timber in a vessel, which serve to suspend the anchor clear of the bow.

CATHE'DRA, in archæology, a term used to denote the pulpit, or the professor's chair. It originally signified any chair.——Among ecclesiastical writers it denotes a bishop's see, or throne. Hence, *ex cathedra* is a phrase much used among the clergy of the Romish church, in relation to the solemn decrees of the pope.

AN INFUSION OF ELDER LEAVES POURED OVER PLANTS WILL PRESERVE THEM FROM THE DESTRUCTIVE RAVAGES OF CATERPILLARS.

CATHE'DRAL, the episcopal church, or a church where there is a bishop's seat or see. A cathedral was originally different from what it is now, the Christians, till the time of Constantine, having no liberty to build any temple. By their churches they only meant their assemblies; and by their cathedrals, nothing more than consistories.

CATHERINE-WHEEL, in architecture, a large circular ornament in Gothic windows. Also, a sort of fire-works constructed in the form of a wheel, which is made to turn round when it is let off.

CATH'ETER, in surgery, a tubular instrument, usually made of silver, to be introduced into the bladder, in order to search for the stone, or discharge the urine when suppressed; also a bougie made of silver or caoutchouc.

CATH'ETUS, in geometry, a line or radius falling perpendicularly on another line or surface; as the two sides of a right-angled triangle.——*Cathetus of incidence*, in catoptrics, a right line drawn from a point of the object, perpendicular to the reflecting line.——*Cathetus of reflection*, or *of the eye*, a right line drawn from the eye, perpendicular to the reflecting line.——*Cathetus of obliquation*, a right line drawn perpendicular to the speculum, in the point of incidence or reflection.——In architecture, a *cathetus* is a perpendicular line, supposed to pass through the middle of a cylindrical body, as a baluster, column, &c.

CATH'OLIC, an epithet properly signifying universal. Originally this appellation was given to the Christian church in general, but now the Romish church assumes it exclusively to itself; whence the name of Roman Catholics has been applied, since the Reformation, to the followers of the Romish doctrine and discipline. In the strict sense of the word, there is no catholic church in being, that is, no universal Christian communion.——*Catholic Majesty*, the title given to the king or queen of Spain.——*Catholic Priest*, a clergyman or priest ordained to say mass and administer the sacraments, &c., according to the rites of the Romish church.——*Catholic Emancipation*, is the abolition of those civil and ecclesiastical restraints to which the Catholics of Great Britain and Ireland were formerly subjected. The first step towards this took place in 1793, when an act of parliament was passed, which conferred the elective franchise on the Catholics, threw open to them all employments in the army in Ireland, and all offices in the navy. In 1801 the legislative union of Great Britain and Ireland took place; but though full emancipation had been promised, it was said, as a consequence of this union, it was not fulfilled; and many unsuccessful attempts were afterwards made to effect it. At length, in 1829 (April 10), a *relief bill*, abolishing the civil disabilities of Roman Catholics, by repealing the oaths of supremacy, &c., was carried by the Wellington administration. By this bill, Catholics are eligible to all offices of state, excepting the lord-chancellorships of England and Ireland, the lord-lieutenancy of Ireland, the office of regent or guardian of the united kingdom, and that of high commissioner to the church of Scotland.

CATHOL'ICON, a remedy for all diseases; a soft purgative electuary, so called, as being supposed an universal and efficacious purge of all humours.

CAT'KIN, in botany, a species of calyx, or rather of inflorescence, consisting of a long stem thickly covered with scales, under which are the flowers and the essential parts of the fruit; so called from its resemblance to a cat's tail. Catkins are to be found on the hazel, willow, birch, oak, poplar, &c.

CATO'CHE, or CATO'CHUS, in medicine, a tetanus or spasmodic affection, by which the patient is rendered, in an instant, as immoveable as a statue, without either sense or motion, and continues in the same posture he was in at the moment he was seized. The proximate cause of this disease is the immobility of the common sensory, from the time of the first attack, and therefore is an absolute rest of the blood in the brain, of the glands of the brain, and of all its emissories. It seldom changes to any other disease, and sometimes it has been succeeded by an epilepsy, convulsions, madness, or an atrophy, which has ended in death.

CATO'DON, in ichthyology, a genus of cetaceous fishes; the characters of which are these: they have no teeth in the upper jaw, nor any fin on the back.

CATOP'SIS, in medicine, an acute and quick perception; particularly that acuteness of the faculties which accompanies the latter stages of a consumption.

CATOP'TRICS, that part of optics which explains the properties of reflected light, and particularly that which is reflected from mirrors.

CAT'SILVER, a fossil, a species of mica. It is of three sorts, the yellow or golden, white or silvery, and the black.

CATOP'TROMANCY, a species of divination among the ancients, which was performed for the sick, by letting down a mirror, fastened by a thread, into a fountain before the temple of Ceres, to look at his face in it. If it appeared distorted and ghastly, it was a sign of death; if fresh and healthy, it denoted a speedy recovery.

CAT'S EYE, in mineralogy, a stone, or sub-species of quartz, very hard and transparent, of a glistening gray, with a tinge of green, yellow, or white.

CAT'S-TAIL GRASS, a kind of reed, of the genus *typha*, bearing a spike, like the tail of a cat.

CAT'TLE, horned beasts, that feed in pasture, or generally all four-footed beasts that serve for domestic purposes.

CAU'DEX, in botany, the stem of a tree.

CAUK, a name given by miners to certain specimens of the compact sulphate of barytes. The same word is sometimes given to masses composed of concentric lamellar concretions.

GEORGE III. DECLARED THAT CATHOLIC EMANCIPATION WAS INCONSISTENT WITH HIS CORONATION OATH, AND FIRMLY OPPOSED IT.

THE CATHOLIC EMANCIPATION BILL WAS REJECTED BY THE LORDS IN 1825, WHEN THE DUKE OF YORK SOLEMNLY OPPOSED IT.

CAU'DA, in astronomy, the Latin name for tail, which is prefixed to the names of several constellations, to denote certain stars in their tails; as *Cauda Capricorni, Cauda Leonis*, &c.

CAUL, in anatomy, a membrane in the abdomen, covering the greatest part of the lower intestines, and usually furnished with a large quantity of fat. It is more properly termed the *omentum*, or from its net-like structure, *reticulum*.——The word *caul* is also used for a membrane which encompasses the head of many new-born children, to which vulgar superstition absurdly annexes the charm of preservation from drowning.

CAULES'CENT, in botany, having a stem different from that which produces the flower. Linnæus applies this term to the root also, as in the turnip.

CAULIF'EROUS, an epithet given to such plants as have a perfect caulis or stem.

CAUL'IFLOWERS, a much esteemed species of *brassica*, or cabbage.

CAUL'INE, in botany, growing immediately on the stem, without the intervention of branches; as a *cauline* leaf, bulb, peduncle, &c.

CAU'LIS, in botany, the stalk of herbaceous plants: this in trees is called *caudex*, or the trunk; and in grasses *culmus*, or the stem.

CAUS'ALTY, among miners, the light earthy parts of ore, carried off by washing.

CAUSAL'ITY, or CAUSA'TION, among metaphysicians, the action or power of a cause in producing its effect.

CAUSE, that from whence anything proceeds, or by virtue of which anything is done: it stands opposed to *effect*. We get the ideas of cause and effect from our observation of the vicissitude of things, while we perceive some qualities or substances begin to exist, and that they receive their existence from the due application and operation of other beings. That which produces is the *cause*; that which is produced, the *effect*.——Causes are distinguished, by the schools, into efficient, material, final, and formal. *Efficient Causes* are the agents employed in the production of anything. *Material Causes*, the subjects whereon the agents work; or the materials whereof the thing is produced. *Final Causes* are the motives inducing an agent to act: or the design and purpose for which the thing was done. Causes are again distinguished into physical and moral; universal, or particular; principal, or instrumental: total, or partial; univocal, equivocal, &c.——*Cause*, among civilians, is the same with *action*; denoting any legal process which a party institutes to obtain his demand, or by which he seeks his supposed right.

CAU'SEWAY, or CAU'SEY, a way raised above the natural level of the ground, by stones, stakes, earth, or fascines; serving either as a road in wet marshy places, or to prevent a river from overflowing the lower grounds. It is also very generally used for a raised way or path in any ordinary road.

CAUS'TIC, in medicine, any substance of so hot a nature, that, being applied, it corrodes and burns the texture of the parts. Caustics differ from cauteries in performing their effects slower, and with less force and pain.——*Lunar Caustic*, a preparation of crystals of silver, obtained by solution in nitric acid, and afterwards fused in a crucible. It is a nitrate of silver.——*Caustic Curve*, in geometry, a curve formed by a coincidence of the rays of light, reflected from some other curve.

CAUSTI'CITY, the quality of acting like fire on animal matter; or of combining with the principles of organized substances, and destroying their texture—a quality belonging to concentrated acids, pure alkalies, and some metallic salts.

CAU'TERY, in surgery, a medicine for burning, eating, or corroding any solid part of the body. The act of burning or searing some morbid part is termed *cauterization*.

CAUTIO'NE ADMITTEN'DA, in law, a writ which lies against a bishop that holds an excommunicated person in prison for contempt, after he has offered sufficient caution or security to obey the orders of the church. On receipt of this writ, the sheriff warns the bishop to take caution.

CAVALCA'DE, a pompous procession of horsemen, equipages, &c., by way of parade to grace a triumph, public entry, or the like.

CAVALIER', a gallant armed horseman. It was also an appellation given to the party of Charles I. to distinguish them from the parliamentarians, who were called Round-heads.——In fortification, a work raised within the body of a place, above the other works.

CAV'ALRY, a body of soldiers on horseback; a general term for light-horse, dragoons, lancers, and all other troops who are armed and mounted. Their chief use is to make frequent excursions to the disturbance of the enemy, and intercept his convoys; in battle, to support and cover the infantry, and to break through and disorder the enemy. The use of cavalry is probably nearly as ancient as war itself. At the present day the cavalry is divided into *light* and *heavy horse*, which are employed for different purposes. The heavy cavalry, with defensive armour (cuirassiers), is generally employed where force is requisite; the lighter troops are used in small detachments, where swiftness and continued effort are required.

CA'VA VE'NA, in anatomy, the largest vein in the body, descending from the heart.

CA'VEAT, an entry in the spiritual courts, by which the probate of a will, letters of administration, licence of marriage, &c., may be prevented from being issued without the knowledge, and, if the reason be just, the consent of the party entering the caveat.

CAV'ERN, a natural cavity, or deep hollow place in the earth, arising either from arches accidentally made, or from streams of water flowing under ground. One of the grandest natural caverns known is Fingal's cave, in Staffa, one of the western islands

THOSE CAVERNS WHICH ARE FOUND IN LIMESTONE AND GYPSUM ARE UNQUESTIONABLY THE RESULTS OF THE DISSOLVING POWER OF WATER.

THE EFFICACY OF CAVALRY ARISES PARTICULARLY FROM THE MORAL IMPRESSION WHICH IT GENERALLY PRODUCES ON THE ENEMY.

of Scotland. The grotto of Antiparos, in the Archipelago, is celebrated for its magnificence. In some parts, immense columns descend to the floor; others present the appearance of trees and brooks turned to marble. The Peak Cavern, in Derbyshire is also a celebrated curiosity of this kind. It is nearly half a mile in length, and, at its lowest part, 600 feet below the surface. Many caves are formed by the lava of volcanoes. In the Cevennes mountains, in France, are caverns and grottoes of great extent, and which abound in objects of curiosity. But the largest we read of is the cavern of Guacharo, in South America, which is said to extend for leagues.

CAVIARE, (pron. *caveer'*) the spawn or hard roes of sturgeon, made into cakes, salted and dried in the sun, much used in Russia, and other parts of the continent.

CAVETTO, in architecture, a hollow member, or round concave moulding, containing the quadrant of a circle; and used as an ornament in cornices.

CAV'EZON, a sort of nose-band, either of iron, leather, or wood, sometimes flat, and at other times hollow or twisted, which is put on the nose of a horse, to wring it, and thus to forward the suppling and breaking of him.

CAV'IN, in military affairs, a natural hollow sufficiently capacious to lodge a body of troops, and facilitate their approach to a place.

CAV'OLINITE, a newly-discovered mineral, occurring in the interior of calcareous balls, &c.

CAY'ENNE PEPPER, a pungent ingredient in soups and highly-seasoned dishes, made from the fruit of different species of capsicum, which when ripe, is gathered, dried in the sun, and then pounded. It is eaten both with animal and vegetable food, and is mixed, in greater or less proportion, with almost all kinds of sauces. It is used also in medicine as a stimulant, and is said to have been found efficacious in many gouty and paralytic affections.

CE'DRAT, in botany, a species of citron-tree.

CE'DRIA, or CE'DRIUM, a resinous liquor, issuing from the great cedar tree, or cedar of Lebanon. It yields a strong smell, is transparent, and of a thick unctuous consistence. It is possessed of two opposite qualities, viz. to preserve dead bodies, by its drying and consuming superfluous moisture, without damaging the solid parts; and to putrify the soft and tender parts of living bodies, without exciting pain.

CE'DRUS, the CE'DAR, in botany, is an evergreen tree, growing to a great size, and remarkable for its durability. Cedar-wood, which is of a fragrant smell and fine grain, is almost incorruptible by reason of its bitterness, which renders it distasteful to worms. Historians tell us, that some of this timber was found in the temple of Apollo at Utica, two thousand years old. The cedars of Lebanon are famous, as having been used by Solomon in building the temple of Jerusalem.

CEIL'ING, in architecture, the upper part or roof of a room, being a lay or covering of plaster over laths, nailed on the bottom of the joists which bear the floor of the upper room, or on joists put up for that purpose where there is no upper room, hence called ceiling joists.

CEL'ARENT, in logic, a mode of syllogism, wherein the major and conclusion are universal negative propositions, and the minor an universal affirmative; as "No man that is a hypocrite can be saved: Every man who with his lips only cries Lord, Lord, is a hypocrite: Therefore, no man, who with his lips only cries Lord, Lord, can be saved."

CEL'ERES, in Roman antiquity, a regiment of body guards belonging to the Roman kings, established by Romulus, and composed of 300 young men chosen out of the most illustrious Roman families, and approved by the suffrages of the curiæ of the people, each of which furnished ten.

CELESTIAL, in its first and obvious sense, denotes something pertaining to, or dwelling in heaven. In mythology, the term is applied to the residence of the gods, supposed to be in the clouds or stars; and hence the space in which the stars are situated are commonly called the celestial spaces.

CEL'ESTINE, in mineralogy, native sulphate of strontian; it receives its name from its occasionally being of a delicate blue colour.

CEL'ESTINS, a religious order of Christians, reformed from the Bernardins by Pope Celestin V. The Celestins rise two hours after midnight to say matins; they eat no flesh at any time, except when sick, and fast often. Their habit is a white gown, a capuche, and a black scapulary.

CELEUS'MA, in antiquity, a naval shout serving as a signal for the mariners to ply their oars, or to cease from rowing. It was also made use of to signify the joyful acclamation of vintagers, and the shouts of the conquerors over the vanquished.

CELIB'ACY, an unmarried or single state of life, to which, according to the doctrine, or at least the discipline of the church of Rome, the clergy are obliged to conform.

CELL, in its first and obvious sense, a small, close apartment, as in a prison; and in a less restricted sense, it denotes any small cavity or hollow place; as the *cells* of the brain, the *cells* of a honeycomb, &c. ——In anatomy, a little bag or bladder, containing fluid or other matter; as the *adipose cells*, containing fat.——In botany, a hollow place in a capsule, in which seeds are lodged.

CEL'LULAR MEMBRANE, a net-work of fine threads, the masses of which are filled with thin plates of fat or fluid, and which membrane surrounds every muscle, artery, vein, nerve, and organ of the body.

CEL'TIC, pertaining to the *Celts*, or primitive inhabitants of Britain, Gaul, Spain. Thus we say *Celtic* customs, *Celtic* origin, *Celtic* remains, &c.

CEM'ENT, any glutinous or other sub-

stance having the quality of uniting bodies in close cohesion, as mortar, glue, &c. Figuratively, a bond of union between persons.

CEMENTA'TION, in chemistry, the act of applying cements to substances so as to corrode or change them; which is done by surrounding them with the powder of another body, and exposing them, in a close vessel, to a heat not sufficient to fuse them. ——*Cementation*, in the arts, is a general method of forming steel from iron, by means of the application of charcoal. In a proper furnace layers of bars of malleable iron and layers of charcoal are placed one upon another, the air excluded, the fire is raised to a great height, and kept up for eight or ten days. If after this the conversion of the iron into steel be complete, the fire is extinguished, and the whole is left to cool for six or eight days longer. Iron prepared in this manner is named blistered steel, from the blisters which appear on its surface. Copper is converted into brass by cementation with the powder of calamine and charcoal.

CEM'ETERY, a repository for the dead. Among modern improvements, perhaps few are more deserving of commendation than the custom, recently introduced, of appropriating an eligible spot of ground, at a convenient distance from populous towns, for the purpose of human interment. Who is there, for instance, that has observed the neatness, order, and quietude which characterise the cemetery at Kensall Green (a few miles to the north-west of London), and does not rejoice that the indecent practice of piling coffin upon coffin in the noisome churchyards of a crowded city, is likely in a few years more to be remembered only as a relic of barbarism. There is, indeed, a suitable solemnity about the hallowed precincts of a *country* church—the unaspiring fane, the aged yew-trees, and the artless tributes to departed worth. *There* undisturbed the ashes of our fathers rest,—*there* no other cemetery is needed: but amid the crowded haunts of man, where the population is dense, and all around teems with the noise and bustle of commercial enterprize, the sensitive mind recoils, almost with horror, at the idea of *such* a spot being made a receptacle for the mouldering remains of frail mortality.—— Although the idea of public cemeteries did not originate with us, it is pleasing to know that the example set in the metropolis is rapidly extending to other large places, and that the feeling which at first existed against them is fast subsiding. Reason has in this instance triumphed over prejudice: and though we are not very anxious to see the generality of Parisian customs followed, we are not the less disposed to adopt any which come so powerfully recommended as that of their interesting cemetery, *Pere Lachaise*. This city of the dead is situated on a rising ground in the north-west part of Paris, and from it you look down on the gayest scene in the world! It contains a great variety of tombs, and funereal monuments of every style; some simple and unaffected; others elaborate both in workmanship and in the praise of those for whom they were erected; while many record not even the names of those whose bones repose beneath.

CEN'OTAPH, in antiquity, an empty tomb, erected in honour of the deceased, and differing from a sepulchre, in which the body was actually deposited.

CEN'SER, in the religious rites of the ancients, was a vase, containing incense to be used in sacrificing to the gods. Censers were likewise in use among the Jews, as we find in the 1 Kings vii. 50. "Solomon, when he prepared furniture for the temple of the Lord, among other things made censers of pure gold."

CEN'SOR, an officer in ancient Rome, whose business it was to reform the manners and to value the estates of the people. At first they were chosen out of the senate, but after the plebeians had got the consulate open to them, they soon arrived at the censorship. Cicero reduces their functions to the numbering of the people, the correction and reformation of manners, the estimating the effects of each citizen, the proportioning of taxes, the superintendence of tribute, the exclusion from the temples, and the care of the public places. The office was so considerable, that none aspired to it till they had passed all the rest.

CEN'SURE, a judgment which condemns some book, person, or action, or more particularly a reprimand from a superior.——*Ecclesiastical Censures* are penalties by which, for some striking mal-conduct, a member of a church is deprived of the communion of the church, or prohibited from executing the sacerdotal office.

CEN'SUS, in Roman antiquity, an authentic declaration made before the censors, by the several subjects of the empire, of their respective names and places of abode. This declaration was registered by the censors, and contained an enumeration of all their estates, lands, and inheritances, their quantity and quality, with the wives, children, domestics, tenants, and slaves of each citizen. The census was instituted by Servius Tullius, and was held every five years. The word *Census* is still used to signify an enumeration of the inhabitants of any kingdom or state, taken by order of its legislature.

CENT, from *centum*, "a hundred," is used in commercial concerns to signify a hundred pounds. A profit of 10 *per cent.* is the gain of 10*l.* by the use of 100*l.*

CEN'TAUR, in classic antiquity, a monster, half man and half horse. It is intimated by Virgil, and generally believed, that the Centaurs were a tribe of Lapithæ, who inhabited the city of Pelethronium, adjoining to Mount Pelion, and who first broke and rode upon horses. Nations to whom the sight of a man on horseback was new, believed, as did the Americans of the Spaniards, the horse and his rider made but one animal.

CEN'TAURY, the name of a plant, and

a genus of plants, of numerous species; the *lesser centaury* is a species of *gentiana*.

CEN'TENARY, the number of a hundred, or pertaining thereto. Hence the epithet *centennial* for what regularly occurs once in a century.

CENTESIMA'TION, a military punishment, in cases of desertion, mutiny, &c., when every hundredth man is selected for execution.

CENTIFO'LIOUS, in botany, an epithet for having a hundred leaves.

CENTINO'DIA, in botany, a herb so called from its having many knobs or joints: the *Polygonum* of Linnæus.

CEN'TIPEDE, an insect having a hundred feet. In entomology, insects of the genus *Scolopendra*, all of which have numerous feet.

CEN'TO, in poetry, a work wholly composed of verses or passages, promiscuously taken from other authors, and disposed in a new order.

CENTRAL FIRE, a supposed perpetual fire, which, according to the theory of some philosophers, exists in the centre of the earth, and to which, in ancient times, volcanoes and other similar phenomena were attributed.

CEN'TRE, or CEN'TER, a point equally distant from the extremties of a line, figure, or body.——*Centre of gravity*, that point about which all the points of a body, in any situation, exactly balance each other.——*Centre of motion*, the point which remains at rest, while all the other parts of a body move round it.

CENTRIF'UGAL FORCE, the tendency with which bodies restrained in circular motion, endeavour to fly off in a tangent to the periphery of the curve.

CENTRIP'ETAL FORCE, the tendency with which bodies move, or endeavour to move, towards the centre of a system of bodies. Such is gravity, or that force whereby bodies tend towards the centre of the earth; magnetical attraction, whereby the load-stone draws iron; and that force, whatever it be, whereby the planets are continually drawn back from right-lined motions, and made to move in curves.

CENTUM'VIRI, in Roman antiquity, judges appointed to decide common causes among the people. Three were chosen out of each tribe; and though there were five more than a hundred, they were nevertheless called centumviri, from the round number *centum*.

CENTU'RION, among the Romans, an officer in the infantry, who commanded a century, or a hundred men. The Roman legions were, in fact, divided into *centuries*.

CEN'TURY, in a general sense, denotes a hundred; or anything divided into or consisting of a hundred parts. The Roman people, when they were assembled for the electing of magistrates, enacting of laws, or deliberating upon any public affair, were always divided into centuries; and voted by centuries, in order that their suffrages might be the more easily collected; whence these assemblies were called *comitia centuriata*. This mode of dividing the Roman people was introduced by Servius Tullius: the first class contained eighty, to which were added the eighteen centuries of the knights; the three following classes had each twenty centuries, the fifth thirty, and the sixth only one century. —— In chronology, it means the space of one hundred years; and this is the most common signification of the word. As we begin our common computation of time from the incarnation of Christ, the word is generally applied to some term of a hundred years subsequent to it.

CEPHAL'IC, an epithet for medicines which are good for the head-ache.

CEPH'EUS, in astronomy, a constellation of the northern hemisphere.

CE'PHUS, a fowl of the duck kind; also the Mona, a species of monkey.

CERAM'BYX, in entomology, a genus of beetles, whose antennæ are long and setaceous, and the thorax oblong and rounded. Under this genus is comprehended the capricorn-beetle, and a number of other species.

CERAS'TIUM, in botany, a genus of the *decandria-pentagynia* class of plants, the flower of which consists of five bifid petals; and its fruit is a long unilocular pod, containing numerous roundish seeds.

CER'ASIN, any gummy substance which swells in cold water, but does not readily dissolve in it.

CER'ASITE, a petrifaction resembling a cherry.

CERAS'TES, in zoology, the name of a serpent, of the genus *Coluber*, which the ancients supposed to have horns.

CE'RATE, in medicine, a composition made of oil, wax, and other ingredients; used externally in several diseases, where plasters are necessary.

CERATI'TES, the fossil unicorn; a stone in the shape of a horn.

CERATOGLOS'SUS, in anatomy, the name of a pair of muscles, serving to draw the tongue directly into the mouth; but if only one of them acts, it draws the tongue to one side of the mouth.

CERATOI'DES, in anatomy, a name for the *tunica cornea* of the eye.

CERATOPHYL'LUM, in botany, a genus of perennial plants, of the *monœcia-polyandria* class.

CERAU'NIA, in mineralogy, thunderstones; a variety of the *belintholithus nautilites* of Linnæus.

CERAU'NIUM, in botany, a kind of fungus which, according to Pliny, grows plentifully after thunder.

CER'BERA, in botany, a genus of the *pentandria-monogynia* class of plants, the corolla of which consists of a single funnel-shaped petal; the fruit is a large, round, fleshy drupe, marked with a longitudinal furrow on the side, and containing two cells, in each of which is a single seed, or nut. The species are all shrubs.

CER'CHNOS, in medicine, a wheezing noise made in respiration, owing to some disorder in the larynx, &c.

A "CENTURION" IN THE ROMAN ARMIES COMMANDED A COMPANY, ANSWERING TO A CAPTAIN OF INFANTRY AT THE PRESENT DAY.

THE "CEPHALIC" VEIN, WHICH RUNS ALONG THE ARM, WAS SO NAMED, BECAUSE THE ANCIENTS USED TO OPEN IT FOR DISORDERS OF THE HEAD.

CEREA'LIA, in antiquity, feasts of Ceres, instituted by Triptolemus of Eleusis, in Attica. These feasts were celebrated with religious purity; but the votaries of the goddess ran about with lighted torches, in commemoration of her search after her daughter Proserpine.——The word also was used to denote all sorts of corn of which bread is made.

CEREBEL'LUM, the part of the brain in the back of the skull, divided into two lobes; and the part which, when taken away or injured, deprives the animal of the power of volition.

CER'EBRUM, that part of the brain which occupies the front and top of the skull; and which, when removed or injured, deprives the animal of sensation.

CER'EMONY, an assemblage of several actions, forms, and circumstances, serving to render a thing more magnificent and solemn; particularly used to denote the external rites of religious worship, the formality of introducing ambassadors to audiences, &c.——*Master of the Ceremonies*, an officer instituted by James I. for the more honourable reception of ambassadors and strangers of quality, and for the regulation of all matters of etiquette in the assemblies over which they preside.

CER'EOLITE, in chemistry, a substance which in appearance and softness resembles wax; sometimes mistaken for steatite.

CE'RES, a small planet, which revolves round the sun in four years, seven months, and ten days, at the distance of 260,000,000 of miles.

CE'REUS, or CREEPING CEREUS, a plant classed by Linnæus under the genus *Cactus*. There are several kinds remarkable for the sweetness and beauty of their flowers.

CE'RIN, in chemistry, a peculiar substance which precipitates on evaporation from alcohol, which has been digested on grated cork.

CERIN'THIANS, the followers of Cerinthus, one of the first heresiarchs in the church. They denied the divinity of Christ, but they held that a celestial virtue descended on him at his baptism in the form of a dove, by which he was consecrated and made Christ.

CE'RITE, the siliceous oxyde of *cerium*; a rare mineral, of a pale rose red colour, with a tinge of yellow.

CE'RIUM, a recently discovered metal, of a flesh-red colour, semi-transparent, and which becomes friable from heat, but does not melt. Cerium combines with several acids, and forms salts, as the *nitrate of cerium, &c.*

CERO'MA, an ointment made of oil and wax, with which the ancient wrestlers rubbed themselves to render their limbs more pliant.

CER'THIA, the Creeper, in ornithology, a species of *ispida*, a bird, with a yellowish brown back, variegated with white, and a white breast.

CERTIF'ICATE, in a general sense, a testimony given in writing to declare or certify the truth of anything. Of these there are many which are requisite in almost every profession, but more particularly in the law and in the army.

CERTIORA'RI, a writ issuing out of some superior court, to call up the records of an inferior court, or remove a cause there depending, that it may be tried in a superior court.

CER'OMANCY, an ancient mode of divination, by means of dropping melted wax in water, and observing the shapes, &c. it assumed.

CERU'MEN, the wax, or viscid yellow liquid which flows from the ear, and hardens on exposure to the air.

CER'USE, CE'RUSS, or White Lead, a carbonate or calx of lead, made by exposing plates of that metal to the vapour of vinegar.——*Ceruse of antimony* is a white oxyde of antimony, which separates from the water in which diaphoretic antimony has been washed.

CER'VUS, the STAG or DEER, in zoology, a genus of quadrupeds of the order *pecora*. They have deciduous horns, at first hairy, afterwards naked and smooth; and there is only one dog-tooth on each side of the upper jaw, which is placed at a distance from the other teeth. Under this genus are comprehended the camelopard, the elk, the rein-deer, the goat, the stag, and the fallow-deer.

CER'VUS VO'LANS, in entomology, the name of the stag-horned beetle, a remarkably large species of beetle, with its horns deeply jagged or ramified, somewhat like those of a stag.

CESSA'TION OF ARMS, an armistice or occasional truce, agreed to by the commanders of armies, to give time for a capitulation, or for other purposes.

CESSA'VIT, in law, a writ to recover lands, when the tenant or occupier has *ceased* for two years to perform the service which constitutes the condition of his tenure, and has not sufficient goods or chattels to be distrained.

CES'SION, in a general sense, a surrender; but particularly a surrender of conquered territory to its former proprietor or sovereign by treaty.——CESSION, in the civil law, is a voluntary surrender of a person's effects to his creditors, to avoid imprisonment.——In the ecclesiastical law, when an ecclesiastical person is created a bishop, or when a parson of a parish takes another benefit without dispensation, their first benefices become void by cession, without resignation.——A *cessionary bankrupt* is one who has given up his estate to be divided among his creditors.

CES'TRUM, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*, of which there are many species, all of them shrubs, and nearly all natives of South America and the West India Islands.

CES'TUS, a girdle said to be worn by Venus, to which Homer ascribes the power of exciting love towards the wearer. It was also a marriage girdle, richly studded, with which the husband girded his wife at the wedding, and loosed again at night.

CE'TATE, in chemistry, a compound of cetic acid, with a base.

CE'TE, an order of animals in the Linnæan system, including such as have breathing apertures on the head, tail horizontal, and pectoral fins instead of feet; as the dolphin, porpoise, and grampus, &c. *Cetaceous* fish suckle their young like land animals.

CE'TIC ACID, in chemistry, a white solid substance, tasteless and inodorous, formed from spermaceti.

CETOL'OGIST, one who is versed in the natural history of the whale and its kindred animals.

CE'TUS, in astronomy, the Whale, a large constellation of the southern hemisphere, containing 97 stars.

CEY'LANITE, in mineralogy, an argillaceous kind of stone, found in the island of Ceylon. Its colour is a dark blue.

CHAB'ASITE, in mineralogy, a precious stone, white and sometimes transparent: a kind of *zeolite*.

CHA'FERY, a forge in an iron mill, where the iron is hammered into bars, and brought to perfection.

CHA'FE-WAX, an officer of the chancery court, who fits the wax for sealing writs, &c.

CHAFF, in husbandry, the dry calyx of corn, that is separated from it by screening or winnowing. The word is sometimes used to denote straw or hay cut small for the food of cattle.

CHAF'FINCH, in ornithology, the English name of the *fringilla*, a well-known bird, with an iron-coloured breast, and black wings spotted with white.

CHAIN, a series of connected rings, or links fitted into one another. Chains are made of various metals, sizes, and forms, suited to different purposes.——In surveying, a *chain* is a measure of length, made of a certain number of links of iron wire, serving to measure a certain quantity of ground. Gunter's chain consists of a hundred such links, each measuring 7.92 inches, and consequently equal to 66 feet or 4 poles.——In nautical language, *chains* are strong links or plaits of iron, the lower ends of which are bolted through a ship's sides to the timbers.——*Chain-boat*, a large boat fitted for getting up mooring chains, anchors, &c.——*Chain-shot*, two balls connected by a chain: they are used at sea for cutting the shrouds and rigging of a ship.——A *chain-pump* consists of a long chain, equipped with a sufficient number of valves, moving on two wheels; and is managed by a long winch, on which several men may be employed at the same time.——*Chain-wales* of a ship, are broad and thick planks projecting from a ship's side, abreast of and behind the masts.——A *top-chain*, on board a ship, is a chain to sling the sail-yards in time of battle, to prevent their falling, when the ropes that support them are shot away.——*Chain-work*, work consisting of threads, cords, and the like, linked together in the form of a chain, as tambour or net-work, &c.

CHAIR, *(cathedra)*, was anciently the *suggestum*, or pulpit, whence the priest or public orator spoke to the people. [See CATHEDRA.] It is still applied to the place whence professors in universities deliver their lectures; thus we say, the professor's chair. It is commonly used for a speaker or president of a public council or assembly, as the *speaker's chair;* and by a metonymy, the speaker himself; as, to address the *chair*.——*Chair*, among the Roman Catholics, certain feasts held anciently in commemoration of the translation of the see or seat of the vicarage of Christ by St. Peter.——*Curule Chair*, in Roman antiquity, an ivory seat placed on a car, wherein were seated the chief magistrates of Rome, and those to whom the honour of a triumph was granted.

CHALA'ZA, among naturalists, a white knotty string at each end of an egg, whereby the yolk and white are connected together.——In medicine, it is a disorder in the eyelids, well known by the name of a *stye*.

CHALCAN'THA, in natural history, a kind of compound salts, of a coarse and irregular structure, hard, and naturally impure and opaque.

CHAL'CEDONY, or CAL'CEDONY, in mineralogy, a genus of semipellucid gems, of an even and regular texture, of a semiopaque crystaline basis, and variegated with different coloured cloudy spots. It occurs in small veins, or in cavities of other minerals, and appears to have been formed by the filtration of siliceous matter. Under it may be grouped common chalcedony, heliotrope, carnelian, chrysoprase, onyx, sardonyx, and sard.

CHAL'CEDONYX, a variety of agate, in which white and gray layers alternate.

CHAL'CITE, in chemistry, sulphate of iron, of a red colour, so far calcined as to have lost a considerable part of its acid.

CHAL'CIS, in ichthyology, a fish of the turbot kind.——In entomology, a class of insects, order *hymenoptera*.

CHALCID'ICUM, in ancient architecture, a magnificent hall belonging to a tribunal or court of justice.

CHALDEE', or CHALDA'IC, the *language* spoken by the Chaldeans, or people of Chaldea: it is a dialect of the Hebrew.

CHAL'ICE, the communion cup, or vessel used to administer the wine in the sacrament of the eucharist.

CHALI'ZA, in Hebrew antiquity, the ceremony whereby a woman, left a widow, pulled off her brother-in-law's shoes, who should have espoused her; after which she was at liberty to marry whom she pleased.

CHALK, in natural history, a well known calcareous earth, of an opaque white colour, found in hard masses, and called *creta* and *terra creta*. Chalk thrown into water, raises a great number of bubbles, with a hissing noise, and slowly diffuses itself into an impalpable powder. It contains a large portion of carbonic acid, and is a subspecies of carbonate of lime.——*Black chalk*, is a kind of ochreous earth, of a close structure,

THE CREAMING OR SLIGHTLY-SPARKLING CHAMPAGNE WINES ARE THE BEST.

IRON, IN SPRINGS, BINDS TOGETHER THE SAND AND GRAVEL INTO SOLID MASSES, AND THE CARBONATE FORMS CHALYBEATE SPRINGS.

and fine black colour, used in drawing upon blue paper.——*Red Chalk*, an indurated clayey ochre, used by painters and artificers.

CHAL'LENGE, in a general sense, a summons to fight, whether in a duel or in a pugilistic contest. In law, an exception to jurors, made by the party put on his trial: or the claim of a party that certain jurors shall not sit in trial upon him or his cause. The right of challenge is given both in civil and criminal trials, and extends either to the whole panel, or only to particular jurors. In criminal cases, a prisoner may challenge twenty jurors, without assigning a cause; which is called a *peremptory* challenge.

CHALYB'EATE, an epithet for waters in which iron forms the principal ingredient, as the waters of Tonbridge Wells. Chalybeates act chiefly as absorbents and deobstruents. The action of the particles of a chalybeate, by their elasticity, together with the momentum they give the blood by their ponderosity, makes it not only preferable to most other deobstruents, but also proper in other cases; especially where there is a viscidity of the juices, the blood impoverished, or the circulation languid.

CHAM, or KHAM, the title of the sovereign prince of Tartary. It is likewise applied to the principal noblemen of Persia.

CHA'MA, a bivalve shell, inhabited by a polype, sometimes weighing 500 pounds. Among a great many elegant species of this genus, we may reckon the *concha veneris*, or Venus's shell, with a spinose edge; the *agate-chama*; and the *ziczak chama*.——In zoology, a sort of wolf in Ethiopia, spotted like a panther.

CHAMA'DE, in war, a signal made by beat of drum or sound of trumpet, for a conference with the enemy, either to invite to a truce, or to propose a capitulation.

CHAM'BER, in building, any room situated between the lowermost and uppermost rooms. *Chamber*, in polity, the place where certain assemblies are held; also the assemblies themselves. Of these some are established for the administration of justice, others for commercial affairs. In many languages, *chamber* is used to designate a branch of government whose members assemble in a common apartment. ——*Privy-chamber*. Gentlemen of the privy-chamber are servants of the king, who are to wait and attend on him and the queen at court.——In gunnery, that part of a mortar or great gun, as far as the powder and shot reach when it is loaded.——A *powder-chamber* is a place under-ground for holding powder, &c., that it may be secure from the rain or damp.——The *chamber of a mine*, is a place generally of a cubical form, where the powder is confined.——The *chamber of a lock*, is the space between the gates of a lock in a canal, in which the barge rises and sinks, so as to pass the lock.

CHAM'BERLAIN, in a general sense, is a person who has the management and direction of a chamber, or chambers.——The *Lord Chamberlain of Great Britain* is the sixth high officer of the crown, to whom belongs various duties on the coronation day; and to whom also appertains many privileges. He has to provide all things in the House of Lords during the sitting of Parliament, and the government of the palace of Westminster; and under him are the gentlemen usher of the black rod and other officers. The office is hereditary.—— The *Lord Chamberlain of the Household* is an officer who has the oversight and direction of all officers belonging to the king's chambers, except the precinct of the king's bedchamber.——The *Chamberlain of London* is the officer who keeps the city money, presides over the affairs of citizens and their apprentices, and presents the freedom of the city to those who have faithfully served their apprenticeships.

CHAM'BERS, rooms or apartments belonging to the inns of court.——In anatomy, two spaces between the crystaline lens and the cornea of the eye, divided off by the iris.

CHAMBRE ARDENTE, (French, *burning chamber*), a chamber hung with black cloth, in which state prisoners in France, if of high rank, were tried by torch-light. When Francis II., in the 16th century, established a court to try the Protestants, who were usually condemned to be burned, the people called this court by the same name, in allusion to its awful sentences.

CHAME'LEON, a reptile of the lizard tribe, about twelve inches long, including the tail. It feeds on insects, and from the capacity of its lungs, is enabled to expand its skin, and thereby varying the angle of reflected light, changes its colour to a spectator. Its natural colour in the shade, and at rest, is said to be a bluish gray. It is a native of Asia and Africa. Various poets and fabulists have, at different periods, contributed to its celebrity, and, by inaccurate or fanciful representations, have rendered it far more of a prodigy than nature ever intended it to be. Chameleons are all exceedingly slow, dull, and almost torpid. The only part they move with celerity is their long tongue, which is covered at its extremity with a viscid mucus, and is darted out for the purpose of capturing insects, upon which the animal subsists.

CHAM'OIS, or, the WILD GOAT, an animal which inhabits the Alpine mountains, having horns erect, round and smooth. Its skin is made into soft leather, called *shammy*.

CHAM'OMILE, an odoriferous plant, which has a very bitter taste, but many medicinal virtues.

CHAMPA'GNE, a fine brisk kind of French wine, so called from Champagne, a former province of France.

CHAM'PERTY, in law, a bargain made with either plaintiff or defendant in any suit, for giving part of the land, debt, &c., sued for, to the party who undertakes the process at his own expense.

CHAM'PION, a person who undertakes a combat in the place of another: sometimes the word is used for him who fights in his own cause. In ancient times, when two champions were chosen to maintain a

THE INTOXICATING EFFECTS OF CHAMPAGNE ARE SPEEDY, BUT VERY TRANSIENT; IT IS THEREFORE THE SAFEST WINE OF ANY TO DRINK.

cause, it was always required that there should be a decree of the judge to authorise the combat: when the judge had pronounced sentence, the accused threw a gage or pledge, originally a glove or gantlet, which being taken up by the accuser, they were both taken into safe custody, till the day of battle appointed by the judge. Before the champions took the field, their heads were shaved to a kind of crown or round, which was left at the top: they then made oath that they believed the person who retained them to be in the right, &c. They always engaged on foot, and with no other weapon than a club and a shield; and they always made an offering to the church, that God might assist them in the battle.——*Champion of the King (or Queen)*, an officer who rides armed into Westminster Hall on the coronation, while the sovereign is at dinner, and by herald makes proclamation, "That if any man shall deny the king's (or queen's) title to the crown, he is there ready to defend it in single combat:" which being done, the sovereign drinks to him, and then presents him with the cup for his fee.

CHAN'CEL, that part of the choir of a church between the altar and the balustrade that incloses it, where the minister is placed at the celebration of the communion. The *Chancel* is also the rector's freehold and part of his glebe, and therefore he is obliged to repair it; but where the rectory is impropriate, the impropriator must do it.

CHAN'CELLOR. Under the Roman emperors, a chancellor signified a chief notary or scribe; but in England it means an officer invested with high judicial powers. ——*The Lord High Chancellor of Great Britain* is one of the principal officers of the civil government, created without writ or patent, by the mere delivery of the king's great seal into his custody. He is a privy-counsellor by his office, and prolocutor of the House of Lords by prescription. He also appoints all the justices of the peace throughout the kingdom. Persons exercising this office in former times having been ecclesiastics, and superintendants of the royal chapel, the Lord Chancellor is still styled *keeper of the king's conscience;* and for the same reason he is visitor, in right of the king, of all hospitals and colleges of the king's foundation; and patron of all the king's livings under the value of 20*l.* per annum in the king's books. He is the general guardian of all infants, idiots, and lunatics; has a controul over all public charities; and a jurisdiction of vast extent, as the head of the law, in his Court of Chancery; where he decides without the assistance of a jury, but from which there is an appeal to the House of Lords.——*Chancellor of a Diocese*, a lay officer under a bishop, versed in the canon and civil law, who is judge of his court.——*Chancellor of a Cathedral*, an officer who hears lessons in the church, inspects schools, hears causes, writes letters, and applies the seal of the chapter, keeps the books, &c.——*Chancellor of a University*, an officer who seals the diplomas, or letters of degree, &c. The chancellors of Oxford and Cambridge are selected from among the prime nobility: the former holds his office for life; the latter is elected every three years.——*Chancellor of the Duchy of Lancaster*, an officer appointed chiefly to determine controversies between the king and his tenants of the duchy land, and otherwise to direct all the king's affairs belonging to that court. ——*Chancellor of the Exchequer*, an officer who presides in that court, and takes care of the interests of the crown. He has power with the lord treasurer, to lease the crown lands, and with others, to compound for forfeiture of lands, on penal statutes: he has also great authority in managing the royal revenues, and in all matters relating to the finances of the state.——*Chancellor of the Order of the Garter*, and other military orders, is an officer who seals the commissions and mandates of the chapter and assembly of the knights, keeps the register of their proceedings, and delivers their acts under the seal of their order.

CHAN'CE-MEDLEY, in law, the accidental killing of a person, not altogether without the killer's fault, though without any evil intention.

CHAN'CERY, the grand court of equity and conscience, instituted to moderate the rigour of the other courts that are bound to the strict letter of the law. In this court all patents, the generality of commissions, deeds between parties respecting lands and estates, treaties with foreign princes, &c., are sealed and enrolled. Out of it are issued writs to convene the parliament and convocation, proclamations and charters, &c. And from this court issue all original writs that pass under the great seal, commissions of charitable uses, bankruptcy, idiocy, lunacy, &c.

CHAN'CES, a branch of mathematics, which estimates ratios of probability.

CHA'NGEABLE ROSE, or MARTINICO ROSE, the *Hibiscus mutabilis* of Linnæus. The flowers of this plant are white at their first opening, then change to a blush-rose colour, and as they decay turn to a purple.

CHA'NGES, in mathematics, the permutations or variations which any number of things may undergo in regard to position or order, &c.: as, how many different ways letters may be transposed so as to form words; or how many changes may be rung on a given number of bells, &c.

CHAN'NEL, the deeper part of a strait, bay, or harbour, where the principal current flows, either of tide or fresh water, or which is most convenient for the track of a ship. Also, a narrow sea between two continents, or a continent and an island; as the British or Irish *channel*.

CHAN'TRY, a place to say mass for souls, or sing in divine worship.

CHA'OS, that confusion in which matter is supposed to have existed before the world was produced by the creative power of Omnipotence; or, in other words, the unformed primeval matter of which every

thing was made. The ancient poets, and Ovid in particular, represent *chaos* thus: that there was neither sun to make the day, nor moon to enlighten the night; that the earth was not yet hung in the circumambient air, nor the sea bounded by any shore; but that earth, air, and water, were one undigested mass.

CHAP'EAU, (Fr.) in heraldry, an ancient cap of dignity worn by dukes, made of scarlet velvet and lined with fur.

CHAP'EL, a place of divine worship, served by an incumbent under the denomination of a chaplain. There are various kinds of chapels; as *parochial chapels*, distinct from the mother church; *chapels of ease*, built in large parishes for the accommodation of the inhabitants; *free chapels*, which were founded by different kings; *chapels* belonging to particular *colleges; domestic chapels*, built by noblemen or gentlemen for the use of their families; and dissenting meeting-houses, which are sometimes, though improperly, denominated *chapels*.

CHAP'ELRY, the precinct belonging to a chapel, in distinction from a parish, or that belonging to a church.

CHAP'LAIN, an ecclesiastic who performs divine service in a chapel; but it more commonly means one who attends upon a king, prince, or other person of quality, for the performance of his clerical duties in the private chapel.

CHAP'LET, in a general sense, a garland or wreath to be worn on the head.——In architecture, a little moulding, carved into round beads, pearls, &c.——*Chaplet*, a string of beads used by the Roman Catholics, by which they count the number of their prayers, and are called *paternosters*. This practice is believed to have been introduced by Peter the Hermit into the church on his return from the Holy Land, the Orientals using a kind of chaplet called a chain, and rehearsing one of the perfections of God on each link or bead.

CHAP'TER, in ecclesiastical polity, is an assembly for the transaction of such business as comes under its cognizance. Every cathedral is under the superintendance of the dean and *chapter* of its canons. A meeting of the members of an order of knighthood is also called a *chapter*.

CHAR'ACTER, in its most obvious sense, denotes a mark or sign made by writing, engraving, &c.; these are *literal*, as the letters of an alphabet; *numeral*, as the arithmetical figures; and *emblematical*, when they represent things or ideas.——In a more extended sense it signifies, the peculiar qualities impressed by nature or habit on a person, which distinguish him from others; hence we say, this person is an exalted *character*; that man's *character* is unimpeachable; or, his *character* is not formed, when the person alluded to has not acquired stable and distinctive qualities. We also say, in speaking of persons, "eminent characters," or "vicious characters," &c. ——In natural history, the peculiar discriminating qualities or properties of animals, plants, and minerals, are called their *characters*.

CHARACTERIS'TIC, in a general sense, a peculiar mark or character, whereby a person or thing is distinguished from all others.

CHARA'DE, a syllabic enigma, so named from its inventor, made upon a word the two syllables of which, when separately taken, are themselves words. It consists of three parts; the two first describing the syllables separately; the second alluding to the entire word; and may be considered complete if the whole unite in an epigrammatic point.

CHAR'COAL, an artificial fuel, consisting of wood half burnt, or charred, which is performed in the following manner: the wood is cut into proper lengths, and duly arranged in piles or stacks; and these being coated over with turf, and the surface covered with plaster made of earth and charcoal-dust well tempered together, are set on fire. In about two or three days, when the wood is known to be sufficiently charred, the apertures, which had been left to give vent to the flames, are closed up; and all access of the external air being excluded, the fire goes out of itself. The vapour of burning charcoal is found to be highly noxious, and is, in reality, absolute *fixed air*. In the experiments and discoveries of modern chemistry, charcoal is frequently mentioned; and found to possess many extraordinary properties. It is black, brittle, light, and inodorous; is incapable of putrifying, or rotting like wood; and will endure for ages without alteration.

CHARGE, in a general sense, is that which is enjoined, committed, intrusted or delivered to another, implying care, custody, oversight, or duty to be performed by the party intrusted.——*Charge*, in civil law, the instructions given by the judge to the grand jury.——In ecclesiastical law, the instructions given by a bishop to the clergy of his diocese.——In gunnery, the quantity of powder and ball, or shot, with which a gun is loaded.——In electricity, the accumulation of electric matter on one surface of an electric machine.——In heraldry, whatever is borne on coats of arms.——In military affairs, a signal to attack; as, to sound the *charge;* or the attack itself, by rushing on an enemy with fixed bayonets: but it is used for an onset of cavalry as well as of infantry.

CHAR'IOT, in antiquity, a car or vehicle used formerly in war, and called by the several names of *biga, triga, quadriga*, &c., according to the number of horses which drew them. When the warriors came to encounter in close fight, they alighted and fought on foot; but when they were weary they retired into their chariot, and thence annoyed their enemies with darts and missive weapons. Besides this sort, we find frequent mention of the *currus falcati*, or chariots armed with hooks or scythes, with which whole ranks of soldiers were cut off together: these were not only used by the Persians, Syrians, Egyptians, &c. but we

THE FAMOUS TEMPLE OF EPHESUS WAS BUILT UPON WOODEN FILES, WHICH HAD BEEN CHARRED ON THE OUTSIDE TO PRESERVE THEM.

THE BEAMS OF THE THEATRE AT HERCULANEUM WERE CONVERTED INTO CHARCOAL BY THE LAVA WHICH OVERFLOWED THAT CITY.

THE CITY OF LONDON IS STILL IN POSSESSION OF TWO ORIGINAL CHARTERS GRANTED BY WILLIAM THE CONQUEROR, IN 1066.

find them among our British ancestors. ——The Roman *triumphal chariot* was generally made of ivory, round like a tower, or rather of a cylindrical figure; sometimes gilt at the top and ornamented with crowns; and, to represent a victory more naturally, they used to stain it with blood. It was usually drawn by four white horses, but oftentimes by lions, elephants, tigers, bears, leopards, &c.

CHARISIA, a Roman nocturnal festival and dance kept in honour of the Graces, when sweet-meats called *charisia* were distributed among the guests.

CHARISTIA, a solemn festival among the Romans kept in the month of February. It was well worthy the imitation of Christians; for at this time the relations of each family compromised any differences that had arisen between them, and renewed their former friendships upon the principles of pure benevolence and good-will.

CHARITY, in a general sense, that disposition of heart which inclines men to think favourably of their fellow-men, and to do them good; or liberality and benevolence, either in alms-giving or in contributing towards public charitable institutions.——In a theological sense, supreme love to God, and universal good-will to men.

CHARLATAN, one who makes unwarrantable pretensions to skill, and prates much in his own favour. The original import of the word was an empiric, or quack, who retailed his medicines on a public stage, and drew the people about him by his buffooneries.

CHARLES'S WAIN, in astronomy, seven stars in the constellation called *Ursa Major*, or the Great Bear.

CHARLOCK, the English name of a plant called by botanists *rapistrum*. It is a very pernicious weed among grain.

CHARM, some magical words, characters, verses, &c. imagined to possess some occult and unintelligible power: by which, with the supposed assistance of the devil, witches and sorcerers have pretended to do wonderful things. The word, in its more modern acceptation, is used to describe that which delights and attracts the heart.

CHART, a hydrographical map, drawn for the use of navigators, and showing the situation of coasts, rocks, sand-banks, and sea-marks; the course of currents; the depth of soundings; and the direction of regular winds.——*Mercator's Chart* is one on which the meridians are straight lines, parallel and equidistant; the parallels are also straight lines, and parallel to each other, but the distance between them increases from the equinoctial towards either pole, in the ratio of the secant of the latitude to the radius.——*Globular Chart*, is a meridional projection, in which the distance of the eye from the plane of the meridian, upon which the projection is made, is supposed to be equal to the sine of the angle of 45 degrees.——*Heliographic Charts*, descriptions of the body of the sun, and of the maculæ or spots observed on its disk. ——*Selenographic Charts*, are draughts of particular places, or small parts of the earth.

CHARTER, in law, a written instrument, executed with usual forms, whereby the king grants privileges to towns, corporations, &c.; whence the name of Magna Charta, or the Great Charter of Liberties granted to the people of the whole realm.

CHARTER-PARTY, in commerce, an agreement respecting the hire of a vessel and the freight; which must contain the name and burden of the vessel, the names of the master and freighter, the price or rate of the freight, the time of loading and unloading, and other stipulated conditions.

CHARYBDIS, a much-dreaded vortex at the entrance of the Sicilian straits, celebrated for its engulfing perils, by the ancient writers. It is, however, no longer dreadful to navigators, who, in a quiet sea, and particularly with a south wind, cross it without danger.

CHASE, in law, a part of a forest for game, which may be possessed by a subject: though a forest cannot. The word *chase* has also several meanings in maritime language; as, *chase-guns*, that lie at the head, to fire on a vessel that is pursued, in distinction to *stern-chasers*, which fire on the pursuer.——With huntsmen, the *chase* is a figurative expression for their sport in general.

CHASING, in sculpture, the art of embossing on metals, or representing figures thereon by a kind of *basso-relievo*, punched out from behind, and carved on the front with small gravers.

CHASSEURS, a French term for a select body of light infantry, formed on the left of a battalion, and who are required to be particularly light, active, and courageous.——*Chasseurs à cheval*, a kind of light horse in the French service.

CHATEAU, a French word, formerly used for a castle or baronial seat in France; but now simply for a country seat.

CHATOYANT, in mineralogy, a hard semi-transparent stone, generally very small, which being cut smooth, presents an undulating or wavy light, and is of a yellowish grey or green colour.——The word *chatoyant* is also used to express a changing undulating lustre, like that of a cat's eye in the dark.

CHATTELS, in law, personal goods, movable, or immovable.

CHECK-MATE, the movement in a game of chess that hinders the opposite men from moving, so that the game is finished, and the party who is checkmated has lost.

CHECKY, in heraldry, a term for the shield, or any part of it, when it is divided into checks, or squares.

CHEEKS, a general name among mechanics for those pieces of timber, &c., in any machine, which form corresponding sides, or which are double and alike.

CHEESE, the curd of milk coagulated by rennet, and separated from the whey, then pressed or hardened in a vat, hoop, or mould.——*Cheese-press*, an engine for press-

CHARTERS WERE FIRST GRANTED TO TOWNS, TO EMANCIPATE THE INHABITANTS FROM THE LOCAL TYRANNY OF THEIR FEUDAL LORDS.

ing curd in the making of cheese.—*Cheese-vat*, the case in which curds are pressed into the form of a cheese.

CHEF-D'ŒUVRE (French), a masterpiece, or superior performance of any artist.

CHEG'OE, or CHIG'OE, a tropical insect that enters the skin of the feet, and multiplies incredibly, causing an itching.

CHEL'IDON, in entomology, a brown fly, with silvery wings.

CHELIDO'NIUM, in botany, a genus of plants, class 13 *Polyandria*, order 1 *Monogynia*.

CHELO'NIAN, an epithet to designate animals of the tortoise kind.

CHEM'ISTRY, or CHYM'ISTRY, the science which investigates the nature of bodies, and teaches the composition and properties of material substances, together with the changes they undergo. There is no science more extensive, nor is it scarcely possible for one person to embrace it in its whole extent. To chemistry, more or less scientifically pursued, numerous arts owe their birth and progress; and to chemistry the naturalist must resort for the explanation of phenomena that, without its aid, can only be spoken of by conjecture, and on a true knowledge of which our happiness, as thinking beings, eminently depends. To facilitate the study of this important science, it is considered in different points of view, and thrown into divisions and subdivisions, so that a person may devote himself to one department of it, although the method of observing, analyzing, and combining, is the same in all, and although all the phenomena must be explained by the general theory, and refer to certain laws, of which a previous knowledge is requisite. These laws constitute what is called *philosophical* chemistry, which explains what is meant by the affinity of aggregation or cohesion, and by the affinity of composition or chemical affinity. It also considers the effects of light, heat, and electricity; the nature of the simple and compound inflammable bodies; of air and water; the composition and decomposition of acids; the nature and properties of the salts; their relations to the acids; the calcination, solution, and alloying of metals; the composition and nature of plants; the characteristics of the immediate elements of vegetable substances; the phenomena of animalization; the properties of animal compounds, and the decay of organic substances. These are its *general* views; but, as we have before observed, in order to facilitate the study of chemistry, it is divided into several separate branches. There is a *meteorological* chemistry, by which the great phenomena observed in the atmosphere are explained; and a *geological* chemistry, which seeks to account for the various combinations of nature beneath the earth's surface, which produce volcanoes, veins of metals, coal, basalt, &c. There is also a chemistry of the *mineral* kingdom, comprising the examination of all inorganic substances; a chemistry of the *vegetable* kingdom, which analyzes plants and their immediate products; a chemistry of the *animal* kingdom, which studies all substances derived from living or dead animals; a *pathological* and *pharmaceutic* chemistry, which traces the changes produced by disease, with the nature and preparation of medicines; and *agricultural* chemistry, which treats of the nature of plants and soils, and the laws of production. The practical chemist distinguishes bodies into simple and compound substances. *Simple substances* comprehend such as have hitherto not been decompounded. Of these some are denominated combustibles, because they can undergo combustion, or, in other words, can burn, as hydrogen, carbon, phosphorus, and borax, besides the alkalies, earths, and metals. Some are supporters of combustion, which, though not of themselves capable of undergoing combustion, are necessary to produce this effect in other bodies, of which there are three, namely, the three gaseous bodies, oxygen, chloride, and iodine. *Compound substances* are formed by the union of simple substances with each other, or by that of compound substances with others. They result, 1. from the combination of oxygen, or one of the other simple supporters of combustion, with one of the simple combustibles; such are the acids: 2. from that of a simple body combined with oxygen, with another similar compound; such are the salts: 3. from that of two or three simple combustibles with one another: 4. from that of oxygen with hydrogen and carbon, forming vegetable matter: 5. from that of oxygen with hydrogen, carbon, and azote, forming animal matter. When the constituent parts of bodies are separated from each other, the bodies are said to be decomposed, and the act of separating them is called *decomposition;* on the other hand, when bodies are so intimately united as to form new and distinct substances, this chemical union is distinguished by the name of *combination*. The chemical investigation of bodies therefore proceeds in two ways; namely by *analysis*, that is, the separation of bodies by a series of decompositions and combinations, to come at the knowledge of the constituent parts; and *synthesis*, by a series of processes to form new compounds; and these two forms of investigation may accompany and assist each other. The commencement of the 19th century forms a brilliant era in the progress of chemistry; but great as have been the discoveries, and persevering as are the researches of the most profound inquirers, every step that is taken confirms more strongly the fact, that chemistry is a progressive science, and that the discoveries of to-day may be eclipsed by the discoveries of to-morrow. And therefore truly has it been said, that "its analysis is indefinite;" its termination will have been attained only when the real elements of bodies shall have been detected, and all their modifications traced: but how remote this may be from its present state we cannot judge. Nor can we, from our present knowledge, form

any just conception of the stages of discovery through which it has yet to pass.

CHER'RY, the PRU'NUS CERA'SUS, a fruit, the original stock of which is the wild cherry. The gradual effect of cultivation has been the production of several pleasant varieties, all superior to the fruits of the parent stock. The wood of the cherry-tree, which is hard and tough, is much used by turners, cabinet-makers, &c. The gum that exudes from the bark is said to be, in many respects, equal to gum arabic, and is considered very nutritive.

CHER'RY-LAUREL, the PRU'NO-LAU'RUS CERA'SUS, which produces laurel-water, a most powerful poison, the strength of which (like that of peach-kernels, &c.), depends on the presence of prussic acid.

CHER'SONESE, a tract of land, of any indefinite extent, which is nearly surrounded by water, but united to a larger tract by a neck of land or isthmus.

CHERT, in mineralogy, a subspecies of rhomboidal quartz: which occurs often in metallic veins in primitive mountains. It is somewhat translucent, and of various colours.

CHER'UBIM, the plural of CHERUB, an order of angels, two of which, by the command of God, were represented as overshadowing the propitiatory or mercy-seat. They are usually represented by painters and sculptors by a child's head between wings; and in the celestial hierarchy they are placed next in order to the seraphim.

CHER'VIL, a genus of umbelliferous plants whose leaves are divided into many segments. Two species are called *Cow-weed*.

CHES'LIP, a small vermin that lies under stones and tiles.

CHESS, a game played by two persons sitting *vis-a-vis*, and having between them a checkered board, containing sixty-four squares, alternately white and black. The game affords so much variety, so much scope for calculation, so many opportunities to exhibit foresight and penetration, that it has been held in great estimation by all persons acquainted with it, and all who have conquered the difficulties of learning it. Whilst it affords enjoyment worthy of mature minds, it is an excellent exercise for the young, as it teaches patience and circumspection, strengthens the judgment, and encourages perseverance in a plan affording a prospect of eventual success, though, at the moment, the situation of things may appear very critical. It is a game of Asiatic origin. The Chinese pretend to have known it 200 years before the Christian era. In the sixth century it was brought from India to Persia, whence it was spread by the Arabians and the Crusaders all over the civilized world.——Although it may trespass a little on our limits we deem it necessary to insert the *laws of this unrivalled game*.—The board must be so placed, that each player has a white square at his right hand. Each side has eight men, consisting of a king, queen, two knights, two bishops, and two rooks or castles, besides eight pawns or foot-soldiers which are all moved according to the following rules. 1: If the board, or pieces, be improperly placed, the mistake cannot be rectified after four moves on each side are made. 2: When a player has touched a piece, he must move it, unless it was only to replace it; when he must say, *J'adoube*, or *I replace*. 3: When a player has quitted a piece he cannot recall the move. 4: If a player touch one of his adversary's pieces without saying *J'adoube*, he may be compelled to take it, or, if it cannot be taken, to move his king. 5: When a pawn has moved two steps, it may be taken by any adversary's pawn which it passes, and the capturing pawn must be placed in that square over which the other leaps. 6: The king cannot castle if he has before moved, if he is in *check*, if in castling he passes a check, or if the rook has moved. 7: Whenever a player *checks* his adversary's king, he must say *check*, otherwise the adversary need not notice the check. If the player should, on the next move, attack the queen, or any other piece, and then say *check*, his adversary may replace his last move, and defend his king. 8: When a pawn reaches the first row of the adversary's side, it may be made a queen, or any other piece the player chooses. 9: If a false move is made, and is not discovered until the next move is completed, it cannot be recalled. 10: The king cannot be moved into check, nor within one square of the adverse king, nor can any player move a piece or pawn that leaves his king in check.—The object of the game is, to bring the adversary's king into such a situation that he cannot move, which is called *check-mating*. The king can never be taken; and the play ends with a checkmate.

CHEST, which in anatomical language is called the *thorax*, is the cavity of the body between the neck and the belly, containing the pleura, the lungs, heart, œsophagus, thoracic duct, part of the vena cava, the vena azygos, &c.

CHEST'NUT, or CHES'NUT, the nut of a tree belonging to the genus *Fagus*. It is enclosed in a prickly pericarp, which contains two or more seeds. The tree grows to a great size, and produces very valuable timber. ——The *Horse-chestnut* is a tree of the genus *Æsculus*. The common tree of this sort is a native of the north of Asia, and admired for the beauty of its flowers. The *Scarlet-flowering horse-chestnut* is a native of Carolina, Brazil, and the East.——There is also another, called the *Indian Rose-chestnut*, of the genus *Mesua*.

CHEVAL-DE-FRISE (generally used in the plural, CHEVAUX-DE-FRISE, (Fr. pron. *shev'o de free'z*), spikes of wood, pointed with iron, five or six feet long, fixed in a strong beam of wood, and used as a fence against cavalry, or to stop a breach, &c.

CHEVALIE'R, a gallant young man.—— In heraldry, a horseman armed at all points.

CHEVRETTE, a military term for a

kind of gin, or machine, for raising guns or mortars into their carriages.

CHEV'RON (in heraldry), an honourable ordinary, representing two rafters of a house joined together, or meeting at the top.——*Per Chevron*, is when the field is divided only by two single lines, rising from the two base points, and meeting in the point above, as the chevron does.

CHEVROTA'IN, in zoology, a small kind of antelope.

CHI'AN EARTH, a medicinal, compact, dense kind of earth, from Chios, used anciently as an astringent, and also as a cosmetic.

CHIARO SCURO (an Italian phrase, meaning *clear-obscure*), is the art of distributing lights and shadows in painting. This is of the highest importance, and one of the most difficult branches of an artist's study, because of the want of precise rules for its execution.

CHIAS'TOLITE, a curious kind of chrystalized mineral, sometimes called *macle*.

CHICA'NERY, mean or unfair artifices to perplex a cause or obscure the truth; applied either in a legal sense, by which justice is somehow intended to be perverted; or to disputatious sophistry.

CHIEF, a term signifying the head, or principal part of a thing or person. Thus we say, the chief of a party, the chief of a family, &c.——Chief (in heraldry), one of the honourable ordinaries, which occupies the head or upper part of the escutcheon. As the head is the chief part of a man, so is the chief the principal part of the escutcheon, and contains a third part of the field.

CHIE'FTAIN, a captain or commander of any class, family, or body of men: thus, the Highland chieftains, or chiefs, were the principal noblemen or gentlemen of their respective clans.

CHIL'BLAIN, a tumour occasioned by suddenly warming a cold part, or suddenly cooling a heated part: hence the parts of the body most subject to chilblains, are the toes, fingers, ears, &c.

CHIL'IAD, the sum or number of one thousand. Hence *Chil'iarch* denotes the military commander or chief of a thousand men: *Chil'iarchy*, a body consisting of 1000 men: *Chiliahe'dron*, a figure of 1000 equal sides: and *Chil'iagon*, a figure of 1000 angles and sides.

CHIL'TERN-HU'NDREDS, a range of chalky hills on the borders of Bedfordshire and Buckinghamshire, belonging to the crown, and having the office of Steward of the Chiltern Hundreds attached to it. It being an established rule that a member of parliament receiving a place under the crown cannot sit, unless re-elected, the acceptance of a stewardship of the Chiltern Hundreds is a formal manner of resigning a seat. *Chiltern* is from the Saxon word *chilt*, and generally applied to the hundreds that lie in the hilly part of a county.

CHIME'RA, in its modern acceptation, means a vain or idle fancy; a creature of the imagination, full of contradictions and absurdities. In fabulous history, it denoted a monster with three heads, that of a lion, a goat, and a dragon, vomiting flames. The foreparts of the body were those of a lion, the middle was that of a goat, and the hinder parts were those of a dragon.

CHIMES, the musical sounds of bells struck with hammers, arranged and set in motion by clock-work. In a clock, a kind of periodical music, produced at certain hours by a particular apparatus.

CHIM'NEY, in architecture, a body of brick or stone erected in a building, containing a funnel to convey smoke and other volatile matter through the roof from the grate or hearth. How far the Greek and Roman architects were acquainted with the construction of chimneys is a matter of dispute. No traces of them have been discovered in the ruins of Pompeii, and Vitruvius gives no rules for erecting them. The first certain notice of chimneys, as we now build them, is believed to be that contained in an inscription of Venice, over the gate of an edifice, which states that in 1347 a great many chimneys were thrown down by an earthquake.

CHI'NA-WARE, the most beautiful of all kinds of earthenware, takes its name from China, whence the Dutch and English merchants first brought it into Europe. It is also called *Porcelain*, from the Portuguese *porcellana*, a cup or vessel. The Japan china is considered superior to all other of oriental manufacture, in its close and compact granular texture, its sonorosity when struck, its extreme hardness, its smooth and shining appearance, and its capability of being used to boil liquids in. With the Chinese potters, the preparation of the clay is constantly in operation; and usually remains in the pits from ten to twenty years prior to being used; for the longer it remains there, the greater is its value. The Dresden China has some qualities which render it decidedly superior to the oriental. Its texture exhibits a compact, shining, uniform mass, resembling white enamel, while it possesses firmness, solidity, and infusibility by heat. The requisite materials for the components of the best hard china are sparingly supplied by nature; but modern chemistry has thrown much light on the art, not only in enabling the manufacturer to analyze more perfectly the bodies which constitute these wares, but also in determining the exact proportions in which they combine; and when proper attention is paid to the proportions of the several components, there is seldom any failure. Silica obtained from *flints*, and alumine, are the grand ingredients; and when these substances are properly combined in water, their reciprocal tendencies cause strong adhesion, so that, when hardened merely by evaporation into a paste, they resist decomposition by the atmosphere. It is not our intention to advert to the various processes and manipulations which the clay undergoes previous to its being baked, the ingenuity with which the printer takes his impressions from the cop-

THE FIRST APPARATUS FOR PRODUCING CHIME-MUSIC, IS SAID TO HAVE BEEN MADE AT ALOST, IN THE NETHERLANDS, IN 1487.

FLOUR OF SULPHUR THROWN INTO THE GRATE WHEN A CHIMNEY IS ON FIRE, EXTINGUISHES IT, BY DECOMPOSING THE ATMOSPHERIC AIR.

per-plates, nor the still more ingenious process of transferring and adapting the print to the ware. We will merely add, that the colours, or enamels with which designs are executed on the glazed surface of ware, with colours so vitrifiable as readily to acquire lustre at a moderate heat, has not yet been practised quite a century in our potteries; but such have been the improvements in every branch of the art during late years, and with such laudable rivalry have the abilities of first-rate artists been displayed, that if absolute perfection could be attained by human labour, we might fairly expect to find it here.

CHINTZ, a fine kind of Indian painted calico.

CHIRA'GRA, in medicine, a name for the gout in the hands.

CHI'ROGRAPH, among the Anglo-Saxons, signified any public instrument of gift or conveyance, attested by the subscription and crosses of witnesses. Any deed requiring a counterpart was engrossed twice on the same piece of parchment, with a space between, on which was written *chirograph*, through which the parchment was cut, and one part given to each party. It was also anciently used for a fine: the manner of engrossing the fines, and cutting the parchment in two pieces, is still retained in the chirographer's office, in the Court of Common Pleas.

CHIROL'OGY, the art or practice of communicating thoughts by signs made by the hands and fingers; as a substitute for language.

CHIR'OMANCY, a species of divination, drawn from the different lines and lineaments of a person's hand; by which means, it is pretended the inclinations may be discovered. The modern word is *palmistry*.

CHIRON'OMY, in antiquity, the art of representing any past transaction by the gestures of the body, more especially by the motions of the hands: this made a part of liberal education: it had the approbation of Socrates, and was ranked by Plato among the political virtues.

CHIS'LEU, the ninth month of the Jewish year, answering to the latter part of November and the beginning of December.

CHIV'ALRY, the name anciently given to knighthood, a military dignity; also the martial exploits and qualifications of a knight. Chivalry, as a military dignity, is supposed by some to have taken its rise soon after the death of Charlemagne, and by others as arising out of the crusades, because in these expeditions many chivalrous exploits were performed, and a proud feeling of heroism was engendered. In describing the origin, object, and character of this military institution, Gibbon the historian thus alludes to a successful candidate for the honour of knighthood, and eulogises the institution: "He was created a knight in the name of God, of St. George, and of St. Michael the Archangel. He swore to accomplish the duties of his profession; and education, example, and the public opinion, were the inviolable guardians of his oath. As the champion of God and the ladies, he devoted himself to speak the truth; to maintain the right; to protect the distressed; to practise *courtesy*, a virtue less familiar to the infidels; to despise the allurements of ease and safety; and to vindicate in every perilous adventure the honour of his character. The abuse of the same spirit provoked the illiterate knight to disdain the arts of luxury and peace; to esteem himself the sole judge and avenger of his own injuries; and proudly to neglect the laws of civil society and military discipline. Yet the benefits of this institution, to refine the temper of barbarians, and to infuse some principles of faith, justice, and humanity, were strongly felt, and have been often observed. The asperity of national prejudice was softened; and the community of religion and arms spread a similar colour and generous emulation over the face of Christendom. Abroad in enterprize and pilgrimage, at home in martial exercise, the warriors of every country were perpetually associated; and impartial taste must prefer a Gothic tournament to the Olympic games of classic antiquity. Instead of the naked spectacles which corrupted the manners of the Greeks, and banished from the stadium the virgins and matrons, the pompous decoration of the lists was crowned with the presence of chaste and high born beauty, from whose hands the conqueror received the prize of his dexterity and courage."

CHIVES, in botany, slender threads or filaments in the blossoms of plants.

CHLÆ'NA, in antiquity, a winter garment worn over the tunica. It was likewise used as a covering for a bed.

CHLA'MYS, in antiquity, a military habit worn over the tunica. It belonged to the patricians, and was the same in the time of war, that the toga was in the time of peace.

CHLO'RATE, in chemistry, a compound of chloric acid with a salifiable base.

CHLO'RIDE, in chemistry, a compound of chlorine with a combustible substance, as the chloride of azote, manganese, lime, &c.

CHLO'RINE, or CHLO'RIC GAS, formerly known as Oxymuriatic acid Gas, is by some considered as a compound, and by others as a simple substance. It combines with carburetted hydrogen, and thereby exhibits the mechanical phenomena of combustion; but will not support animal life. It discharges colours, and is used as a bleaching liquid.

CHLO'RITE, a mineral of a grass green colour, opaque, and composed of small shining grains. There are four subspecies: chlorite earth, common chlorite, chlorite slate, and foliated chlorite.

CHLORO-CAR'BONOUS ACID, in chemistry, a compound of chlorine and carbonic oxyde, formed by exposing a mixture of the two gases to the direct solar rays.

CHLORO'PAL, a recently discovered mineral, of two varieties, the conchoidal and the earthy; both possessing magnetic properties.

IN THE EARLY AGES OF CHIVALRY, ARCHERY WAS CONSIDERED AS AN ESSENTIAL PART OF THE EDUCATION OF A GENTLEMAN.

A TABLE SPOONFUL OF CHLORIDE OF LIME, IN A WINE-GLASS OF WATER, PURIFIES INFECTED AIR AND PREVENTS CONTAGION.

CHLO'ROPHANE, in mineralogy, a variety of fluor spar, found in Siberia. When placed on a heated iron, it gives a beautiful emerald green light.

CHLO'ROPHYL, the green matter of the leaves of vegetables.

CHLORO'SIS, a disease incident to females, characterised by a pale or greenish hue of the skin.

CHOC'OLATE, a cake or paste, made from the kernel of cocoa, mixed with sugar and cinnamon; of which a nutritious beverage is made.

CHOIR, that part of a cathedral where the service is performed. Also, the body of singers there assembled. Hence the word *chorister* is used for a singer whose vocal powers are exercised in divine service.

CHO'KE-DAMP, in mining, the noxious air occasionally found at the bottom of mines.—[See DAMPS.]

CHOL'ERA, a disease of which there are two species: *Cholera spontanea*, which happens in hot seasons without any manifest cause; and *Cholera accidentalis*, which occurs after the use of food that digests slowly and irritates. In warm climates it is met with at all seasons of the year, and its occurrence is very frequent: but in England and other cold climates, it is prevalent in the middle of summer, particularly in the month of August; and the violence of the disease has usually been greater in proportion to the intenseness of the heat. It is characterised by an evacuation of bile, attended with anxiety, painful gripings, vomitings, spasms of the abdominal muscles, and those of the calves of the legs. The disease sometimes proceeds with violence, and if unchecked in its early stages, great depression of strength ensues, and it may quickly terminate in death. But it must not be confounded with the

CHOL'ERA MOR'BUS, or CHOLERA EPIDEMICA, or, as it is sometimes termed, CHOLERA MALIGNA. In Hindostan, spasmodic cholera has probably always existed as a comparatively mild climatic disease; but there is no evidence to show that the Indian Cholera ever bore the epidemic character, or was entitled to rank with pestilential scourges of the worst description, till August, 1817, when it suddenly broke out with unprecedented malignity, attacking the natives first, and manifesting itself among the Europeans in the following month. From January to May, 1818, the pestilence raged with great violence, extending its destructive influence across the country from the mouth of the Ganges to its confluence with the Jumna. In its most malignant form it appeared at Benares, where in two months 15,000 persons perished. In the district of Gorrakpore 30,000 were carried off in a month. By November the epidemic had reached the grand army, commanded by the marquis of Hastings, consisting of 10,000 troops and 80,000 followers. In twelve days nearly 9,000 men had fallen victims to it. Previous to the 14th, it had overspread the camp, sparing neither age nor sex; from the 14th to the 20th, the mortality had become so extensive that the stoutest hearts were yielding to despair, and the camp wore the aspect of a general hospital. The noise and bustle almost inseparable from the presence of a multitude of human beings, had nearly subsided into stillness. Nothing was to be heard but the groans of the dying, or the wailing for the dead. In 1819 it reached the kingdom of Arracan: it then extended itself into Siam, and after destroying 40,000 in Baku, the capital of that kingdom, it passed into the peninsula of Malacca. From thence it travelled to China. Canton was attacked in 1820; and at Pekin its mortality was so frightful, that the government were obliged to have the dead interred at their own expense. From China it passed to the Phillippine and Spice Islands. Thus, in little more than two years, did it traverse a space in Eastern Asia, of 1300 leagues from north to south, and about 1000 leagues from west to east. During the next two years, Arabia, Persia, Mesopotamia and Syria were overrun by the dreadful pestilence. In September, 1823, it entered Astracan, a large and populous town on the northern shore of the Caspian. As soon as this became known to the Russian government, they dispatched a medical commission, composed of six physicians, to investigate its character, and every preventive measure was resorted to: how far they were connected with the result it may be difficult to decide; but certain it is, the disease got no farther in that direction that year than Astracan, and did not again appear in Russia until towards the close of 1828, when it unexpectedly appeared at Orenburg, and in 1830 it again made its insidious entrance at Astracan. It at length reached Moscow, where a *cordon sanitaire* was speedily established, temporary hospitals erected, and the emperor himself visited the town when the disease was at its height. At first the mortality was as great as nine-tenths of all who were attacked, but the number who were infected gradually decreased, and the mortality proportionally diminished. Poland, Prussia, and other parts of Germany, soon after felt its devastating effects; in November, 1831, it reached England; in March, 1832, it broke out at Paris, where 20,000 fell a sacrifice to it in a short time; and in June, 1832, it appeared at Quebec, in Canada, and subsequently spread over the whole American continent. It is not our purpose, nor consistent with the nature of this work, to enter into a description of the symptoms, character, and treatment of this justly dreaded disease; but we thought it material to condense a history of its progress, from its origin in the East to its entrance in our own land; and we will conclude the article, by giving a brief definition of its distinctive features, as they appeared in Britain:—After watery diarrhœa, or other generally slight indisposition, vomiting or purging of a white or colourless fluid, violent cramps, great prostration and *collapse*, the last occurring simultaneously with the vomiting and cramps, or shortly after them.

THE DANGER OF CHOLERA IS IN ALL CASES TO BE ESTIMATED FROM THE DEGREE OF COLLAPSE ATTENDING THE COLD STAGE OF THE DISEASE.

Should the patient survive the last train of symptoms, a state of excitement and fever supervenes.—For a considerable time, the medical world was much divided in opinion as to its contagious or non-contagious nature: the disputes on this subject, however, have now nearly subsided, and the great majority of medical men are persuaded that the disease is epidemic, and not contagious in its character.

CHOL'OGOGUES, medicines which expel or evacuate bilious fæces.

CHOP'IN, a liquid measure: in France, about a pint; in Scotland, a quart.

CHORD, in music, the union of two or more sounds uttered at the same time, forming an entire harmony; as a third, fifth, and eighth.——In geometry, a right line drawn from one part of an arc of a circle to another.

CHOREG'RAPHY, the art of representing dancing by signs, as singing is by notes.

CHORE'US, in ancient poetry, a foot of two syllables; the first long, and the second short; the *trochee*.

CHORIAM'BUS, in ancient poetry, a foot compounded of a trochee and an iambus.

CHOROG'RAPHY, the art of delineating or describing some particular country or province: it differs from *geography* as a description of a particular country differs from that of the whole earth; and from *topography* as the description of a country from that of a town or district.

CHO'ROID, in anatomy, denotes the coat of the eye immediately under the sclerotica; or the inner membrane investing the brain, or the pia mater, &c.

CHO'RUS, in ancient dramatic poetry, one or more persons present on the stage during the representation, uttering an occasional commentary on the piece, preparing the audience for events that are to follow, or explaining circumstances that cannot be distinctly represented. Several examples may be referred to by the English reader, in the plays of Shakspeare. In tragedy, the chorus was at first the sole performer; at present it is wholly discontinued on the stage.——Chorus, in music, is when, at certain periods of a song, the whole company are to join the singer in repeating certain couplets or verses.

CHOUGH, (pron. *chuff*), in ornithology, a fowl of the genus *Corvus*, nearly of the size of the crow, and mischievous, like the magpie. It is black, except the bill, legs, and feet, which are red, and is a native of the west of England, more especially the county of Cornwall, whence it is commonly called the *Cornish chough*.

CHRISM, or CHRIS'OM, in the Romish and Greek churches, an unction or annointing of children, which was formerly practised as soon as they were born.

CHRISTIAN'ITY, the religion of Christians, who derive their name from the founder Christ, *(The Anointed)*, and were first so designated at Antioch. The foundation of a Christian's faith and practice, his ultimate, and, in truth, only appeal, must be to the facts, the doctrines, and the precepts of the Scriptures, especially to those of the New Testament.

CHRIS'TENING, a term particularly applied to infant baptism, denoting the ceremony of admitting a person into the communion of the Christian church by means of baptism, or sprinkling with water.

CHRIST'MAS, the festival observed in the Christian church on the 25th of December, in commemoration of our Saviour's nativity; and celebrated in the church of England by a particular service set apart for that holy day.

CHRIST'MAS-ROSE, in botany, a plant of the genus *Helleborus*, producing beautiful white flowers about Christmas.

CHRISTOMACHI, an appellation given to all heretics who deny Christ's divinity, or maintain hetorodox opinions concerning his incarnation.

CHRIST'S-THORN, in botany, the *Rhamnus paliurus*, a deciduous shrub, having two thorns at each joint. It grows in Palestine and the south of Europe, and is supposed to have been the sort of which the crown of thorns for our Saviour was made.

CHROAS'TACES, a genus of pellucid gems, comprehending all those of variable colours, as viewed in different lights.

CHRO'MATE, in chemistry, a salt or compound formed by the chromic acid with a base.

CHROMAT'IC, in music, an epithet descriptive of that which proceeds by several consecutive semitones.

CHROMAT'ICS, that part of optics which explains the several properties of light and colour.

CHROME, in mineralogy, a metal which in its highest degree of oxydation passes into the state of an acid of a ruby red colour. It takes its name from the various and beautiful colours which its oxyde and acid communicate to minerals into whose composition they enter. Chrome gives a fine deep green to the enamel of porcelain, &c.——*Chromic yellow*, the artificial chromate of lead, is a beautiful pigment.

CHRON'IC, an epithet for inveterate diseases, or those of long duration.

CHRON'OGRAM, an inscription in which a certain date or epoch is expressed by numeral letters.

CHRONOL'OGY, the science which determines the dates of events, and the civil distinctions of time. The divisions of time are either natural or artificial; the natural divisions of time are the year, month, week, day, and hour, deduced from the motions of the heavenly bodies and suited to the purposes of civil life; the artificial divisions of time are the cycle or period, the epoch, and the æra or epoch, which have been framed for the purposes of history. Truly has it been said, "if history without chronology is dark and confused; chronology without history is dry and insipid."

CHRONOM'ETER, a time-piece of a peculiar construction, or any instrument that measures time with great exactness. They are at present much employed by navigators in determining the longitude at sea.

CHROSTAS'IMA, in mineralogy, a name for pellucid gems which appear of one simple and permanent colour in all shades of light.

CHRYS'ALIS, or AURELIA, the second state of an insect, which it passes into from the caterpillar or reptile form, previous to its becoming a butterfly or a moth, &c.

CHRYSAN'THEMUM, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. There are many well-known species; annuals, perennials, and shrubs.

CHRYS'OBERYL, a yellowish gem usually found in small round pieces, or crystalized in eight-sided prisms. It is used in jewellery, and is next to sapphire in hardness.

CHRYS'OLITE, a mineral, or stone of a greenish hue, often transparent. It is sometimes granular, and at other times occurs in small crystals.

CHRYSOM'ELA, a genus of insects with bracelet-like antennæ, thickest towards the extremities; the body of an oval form, and the thorax rounded. Of this genus, which belongs to the order *Coleoptera*, there are different species, denominated from the tree on which they feed, as the chrysomela of tanzy, beech, alder, willow, &c., some being of one colour, some of another, with a tinge of gold colour diffused through it.

CHRYS'OPHRASE, in mineralogy, a subspecies of quartz, often of an extremely beautiful green colour, and translucent or semi-transparent. In hardness it is scarcely inferior to flint.

CHRYSOPHYL'LUM, in botany, a genus of plants; class 5 *Pentandria*, order 1 *Monogynia*. The species are all shrubs.

CHRYSOPŒ'IA, in alchemy, that part of the art which teaches the making of gold out of more imperfect metals.

CHRYSOSPLE'NIUM, Golden-saxifrage, in botany, a genus of the *octandria-digynia* class of plants, without flower petals: the fruit is an unilocular, two-horned capsule, containing a number of very minute seeds.

CHURCH, in religious affairs, is a word which is used in several senses: 1. The collective body of persons professing one and the same religion; or that religion itself: thus, we say, the Church of Christ. 2. Any particular congregation of Christians associating together, as the Church of Antioch. 3. A particular sect of Christians, as the Greek Church or the Church of England. 4. The body of ecclesiastics, in contradistinction to the laity. 5. The building in which a congregation of Christians assembles.

CHURCHWAR'DENS, officers annually chosen by the ministers and vestry, to superintend the church, its property and concerns.

CHYLE, a white or milky fluid in the stomach, consisting of the finer and more nutritious parts of the food, which is received into the lacteal vessels, assimilated into blood, and converted into nutriment.

CHYLIFAC'TION, the process of digestion by which the aliment is converted into chyle.

CHYLOPOIETIC, having the power to convert into chyle.

CHYME, the humour which is immediately drawn from the aliment, and afterwards by a farther process is converted into chyle.

CIBA'RIÆ LE'GES, in Roman history, were sumptuary laws, the intention of which was to limit the expense of feasts, and introduce frugality amongst the people, whose extravagance at table was notorious and almost incredible.

CICA'DA, the BAUM-CRICKET, in entomology, a genus of four-winged insects, of the order *Hemiptera*.

CICATRIC'ULA, a small whitish speck in the yolk of an egg, supposed to be the germinating point or first rudiments of the future chick.

CIC'ATRIX, or CIC'ATRICE, in surgery, a scar, or elevation of callous flesh rising on the skin, and remaining there after a wound or ulcer.

CIC'ATRIZANT, a medicine or application that promotes the formation of a cicatrix; called also an escharotic, agglutinant, &c.

CICERO'NIANS, epithets given by Muretus, Erasmus, &c. to those moderns who were so ridiculously fond of Cicero, as to reject every Latin word, as obsolete or impure, that could not be found in some one or other of his works. The word *Ciceronian* is also used as an epithet for a diffuse and flowing style and a vehement manner.

CICISBE'O, an Italian word signifying one who dangles about females.

CICU'TA, in botany, Water-hemlock. This term was used by the ancients and by medical writers for the *Corium macculatum*, or common hemlock, the juice of which was given as a poison. Both Socrates and Phocion perished by it. It is now often used medicinally with good effect.

CI'DARIS, in antiquity, the mitre used by the Jewish high priests.

CIL'IA, the EYE-LASHES, in anatomy, are certain rigid hairs situated on the arch or tarsus of the eyelids, and bent in a very singular manner: they are destined for keeping external bodies out of the eye, and for moderating the influx of light.

CIL'IARY, in anatomy, an epithet for several parts belonging to the *cilia*, or eyelashes; as the *ciliary glands*, &c.

CIL'IATED, in botany, furnished or surrounded with parallel filaments somewhat like the hairs of the eyelids; whence its name.

CILI'CIUM, in Hebrew antiquity, a sort of habit made of coarse stuff, formerly in use among the Jews in times of mourning and distress. It is the same with what the Septuagint and Hebrew versions call sackcloth.

CIM'BRIC, pertaining to the Cimbri, the inhabitants of the Cimbric Cheronese, now Jutland.

CIMME'RIAN, pertaining to *Cimmerium*, a town at the mouth of the Palus Mæotis, which the ancients pretended was involved in darkness; whence the phrase "Cimmerian

THE CHRYSOLITE EMPLOYED IN THE ARTS COMES CHIEFLY FROM THE LEVANT, AND IS SOMETIMES USED IN JEWELLERY.

THE PATRIARCH OF CONSTANTINOPLE IS THE HEAD OF THE GREEK CHURCH, AS THE POPE IS THE HEAD OR CHIEF OF THE CHURCH OF ROME.

darkness" to denote a deep or continual obscurity. The country is now called the Crimea.

CIM'OLITE, a species of earth, of which there are several varieties; one, of a purple colour, is the steatite, or soap rock; and from another sort, found in the Isle of Wight, tobacco-pipes are made.

CINCHO'NA, the Peruvian bark, obtained from certain trees growing to the height of fifteen or twenty feet, and natives of Peru. Linnæus describes two species, the white and the coloured; and a third has been found in the West Indies, particularly in Jamaica and St. Lucia. The two latter are used in medicine. It was first introduced for the cure of intermittent fevers; and in these, when properly exhibited, it rarely fails of success.

CINC'TURE, in architecture, a ring, list, or orlo, at the top and bottom of a column, separating the shaft at one end from the base, and at the other from the capital.

CINERI'TIOUS, an appellation given to different substances, on account of their resembling ashes, either in colour or consistence.

CIN'NABAR, in natural history, is either native or factitious. *Native* cinnabar is an ore of quicksilver, moderately compact, very heavy, and of an elegant striated red colour. It is called native vermillion, and when used by painters is rendered more beautiful by grinding it with gum-water and a little saffron. It is found amorphous, or under some imitative form, and crystalized. *Factitious* cinnabar is a mixture of mercury and sulphur sublimed, and thus rendered into a fine red colour.

CIN'NAMON, a fragrant spice, obtained from the bark of a low tree, (the *laurus cinnamomum*) growing on the island of Ceylon. The true cinnamon is a most grateful aromatic, and one of the best cordial, carminative spices. Its leaves resemble those of the olive, and the fruit resembles the acorn or olive, having neither the smell nor taste of the bark; both yield an essential oil.

CINQUEFOIL, or Five-Leaved Clover, a perennial. This plant is sometimes borne in coats of arms.

CINQUE-PORTS, the five ancient ports on the east coast of England, opposite to France, namely, Dover, Hastings, Hythe, Romney, and Sandwich, to which were afterwards added, as appendages, Winchelsea and Rye. As places where strength and vigilance were necessary, and whence ships might put to sea in cases of sudden emergency, they formerly received considerable attention from government. They have several privileges, and are within the jurisdiction of the Constable of Dover Castle, who, by his office, is called Warden of the Cinque-Ports. Until the time of Henry VIII. the Crown seems to have had no permanent navy; the Cinque-ports having always furnished nearly the whole of the shipping required for the purposes of the state. In consideration of this service, many privileges and franchises were granted to them by different sovereigns, valuable at the time, but which have now become in a great measure nominal, in consequence of the various exactions and restrictions to which they refer having long since been abolished. The freedom from toll and dues, still recognized at several ports, seems to be the most valuable right remaining to the freemen; the exemption from serving on county juries and from service in the militia are also understood as belonging to them. The jurisdiction of the Cinque-ports extends along the coast continuously from Birchington, which is to the north-east of Margate, to Seaford in Sussex; and each has one or more ports or towns members of it, some of which are corporate, and others not. In ancient times there were several courts of jurisdiction, extending over all the ports and members, and intended either as courts of appeal for persons who considered themselves injured by any of the separate and local tribunals of the different ports, or for regulating the general affairs of the whole association; but these may now be considered as obsolete, their functions having dwindled to mere matters of form.

[We had scarcely penned the foregoing paragraph when we saw an account of the splendid banquet, given at Dover, August 30, 1839, in honour of that illustrious warrior the Duke of Wellington, as Warden of the Cinque-Ports. Participating, in common with the rest of our countrymen, in those feelings which gave birth to this patriotic tribute, we hope to be excused (though we may step a little out of the usual track) for thus endeavouring to perpetuate the remembrance of so proud a day.——Dover was thronged with visitors of rank from all parts of the kingdom: the morning was ushered in by the ringing of bells and the firing of cannon; and every countenance beamed with delight. The pavilion in which the banquet was given was erected on the Priory meadow, directly opposite the large hall, called the Maison Dieu. It was of immense size, (standing on 20,420 feet of ground, including its covered ways and entrance lobbies), and was intended for the accommodation of 2,250 persons. It was gorgeously and appropriately decorated with military emblems, &c. In all parts of the hall floated a profusion of flags; and the effect of this picturesque scene, when filled with the company, was brilliant in the extreme. Party feeling and factious hostility were nobly laid aside; and many members of the British senate, peers as well as commoners, were there assembled to do homage to "the great captain of the age." Among them was Lord Brougham—the bold politician, the astute reasoner, the great forensic orator—a man who had ever taken a prominent station among the *political* opponents of the Duke, but who on that day poured forth a torrent of panegyric, which was heard with grateful delight, and of which the following detached passages will at least convey some slight idea: "On this day, and on this occasion," said his lordship, "all personal, all political feelings are quelled—all strife of party is

hushed; and we are incapable, whatever our opinions may be, of refusing to acknowledge transcendant merits, and denying that we feel the irrresistible impulse of unbounded gratitude. No long course of opposition, however contrasted on public principle—no political hostility (for any other than political never could be felt)—not even long inveterate habits of public opposition—are able so far to pervert the nature, so far to stifle the natural feelings of our hearts, so far to obscure our reason, as to prevent us from feeling, as we ought, boundless gratitude for boundless merits—to pluck from our minds an admiration proportioned to the transcendent genius in peace and war, of him who is our guest; or to lighten and alleviate that painful feeling, that deep sense which the mind never can get rid of when it is overwhelmed by a load of gratitude—a debt too boundless to be repaid." * * * "What else have I to do if I had all the eloquence of all the tongues that ever were attuned to speak? what else can I do, and how would a thousand words, and all the names that can be named, speak so powerfully, or even the tongue of an angel speak so powerfully, as that very one word—Sir Arthur Wellesley, Duke of Wellington—the hero of a hundred fields, in all of which his banner has waved in triumph; who never—I invoke both hemispheres—bear witness Europe, bear witness Asia—who never advanced but to cover his arms with glory! mighty captain, who never advanced but to be victorious—mightier captain, who never retreated but to eclipse the glory of his advance; performing the yet harder task of unwearied patience, of indomitable fortitude, of exhaustless resources, of transcendant skill; the wonders, the miracles of moral courage never yet subdued; despising all that thwarted him with ill-considered advice; neglecting all hostility, so he knew it to be groundless; leaving to scorn reviling enemies, jealous competitors, lukewarm friends; ay, hardest of all to neglect—despising even a fickle public—casting his eye forward to the time when that momentary fickleness of the people would pass away, well-knowing that in the end the public is always just to merit." His lordship then took a brief review of the Duke's matchless achievements in the field, his inexhaustible fertility in difficulties, his high moral courage, and his inflexible devotion to his country; beautifully contrasting all with the actions of the greatest heroes of ancient and modern times, from Cæsar to Napoleon, and acknowledging that he, whose deeds they were met to celebrate, infinitely excelled them. Alluding to the scenes of rapine which had marked the career of former conquerors, and the guilty ambition which led them to enslave their fellow-creatures, he exclaimed, "Our chief has never drawn his sword but in that defensive war, which alone of all warfare is not a great crime. He has never drawn his sword against the liberty of any people, but he has constantly unsheathed it, and, blessed be God, he has triumphantly unsheathed it, to secure the liberty of all. The servant of his prince to command his troops, but the soldier and defender of his country; the enemy of her enemies, be they foreign or be they domestic; but the fast friend of the rights of his fellow-subjects, and the champion of their lawful constitution. The tempest which resounded all over the world is now, thanks to him, hushed; the shock which made the thrones of Europe to quake, and the horns of the altar themselves to tremble, has, thanks to him, expended its force. We may, thanks to him, expect to pass the residue of our days without that turmoil of war in which our youth was brought up; but if ever the materials of some fell explosion should once more be collected by human wickedness in any quarter of the globe—if the hushed tempest should again break loose from its cave—if the shock which is felt not now should once more make our institutions to quiver, happy this nation that knows to what wise counsel to look; happy the sovereign that has at his command the right arm that has carried in triumph the English standard all over the globe; happy the people who may yet again confide, not their liberties indeed, for that is a trust he would spurn from him with indignation—but who would confide in his matchless valour for their safety against all the perils which Providence may yet have in store for them."]

CI'PHER, or CY'PHER, one of the Arabic characters, or figures, used in computation, formed thus 0. A cipher standing by itself signifies nothing; but when placed at the right hand of a figure, it increases its value tenfold.——By *Cipher* is also denoted a secret or disguised manner of writing; in which certain characters arbitrarily invented and agreed on by two or more persons, are made to stand for letters or words.

CIP'OLIN, a green marble from Rome, containing white zones.

CIP'PUS, in antiquity, a low column, with an inscription, erected on the high roads, or other places, to show the way to travellers, to serve as a boundary, to mark the grave of a deceased person, &c.

CIRCE'AN, pertaining to Circe, the fabled daughter of Sol and Perseus, who was supposed to possess great knowledge of magic and venomous herbs, by which she was able to charm and fascinate.

CIRCEN'SIAN GAMES *(Circenses Ludi)*, a general term, under which was comprehended all combats exhibited in the Roman circus, in imitation of the Olympic games in Greece. Most of the feasts of the Romans were accompanied with Circensian games; and the magistrates, and other officers of the republic, frequently presented the people with them, in order to gain their favour; but the grand games were held for five days, commencing on the 15th of September.

CIR'CINAL, in botany, an epithet applied to plants whose leaves are rolled in spirally downwards, the tip occupying the centre.

THE BLOOD IS SAID TO BE ONE-FIFTH OF THE WEIGHT OF THE WHOLE BODY, AND THREE-FOURTHS OF IT ARE IN THE VEINS.

CIRCUMCISION WAS AN ANCIENT PRACTICE OF THE EGYPTIANS, ETHIOPIANS, SYRIANS, PHŒNICIANS, AND OTHER ASIATIC NATIONS.

CIR'CLE, in geometry, a plane figure, bounded by a curve line, called its circumference, and which is everywhere equally distant from a point within, called its centre. The circumference or periphery itself is called the circle, though improperly, as that name denotes the space contained within the circumference. A circle is described with a pair of compasses, fixing one foot in the centre and turning the other round to trace out the circumference. The circumference of every circle is supposed to be divided into 360 equal parts, called degrees and marked °; and each degree into 60 minutes, marked ′.——The word *Circle* is also used to describe an assembly, or set of persons; as a political *circle;* our *circle* of friends, &c.——*Circles of latitude,* are great circles perpendicular to the plane of the ecliptic, passing through its poles and through every star and planet. *Circles* of longitude are lesser circles parallel to the ecliptic, diminishing as they recede from it. ——*Diurnal circles,* are immovable circles supposed to be described by the several stars and other points in the heavens, in the rotation of the earth round its axis.—— *Horary circles,* in dialling, are the lines which show the hours on dials.

CIR'COCELE, in anatomy, a varix, or dilatation of the spermatic vein; hernia varicosa

CIR'CUITS, certain districts or divisions of the kingdom, through which the judges pass once a year, or oftener, to hold courts and administer justice. The six jurisdictions into which England is divided by the twelve judges, are called the Home, Norfolk, Midland, Oxford, Western, and Northern circuits. Wales is also divided into North and South circuits; and Scotland, into South, West, and North.

CIR'CULATING ME'DIUM, a term in commerce, signifying the medium of exchanges, or purchases and sales, whether this medium be gold or silver coin, paper, or any other article; and it is therefore of a more comprehensive nature than the term *money.* All people have a circulating medium of some description, and, accordingly, we find all the tribes of savages hitherto discovered referring to some article in estimating the value of the various commodities which compose their capital. But from the earliest times, the precious metals, where they could be had, have been preferred for this purpose, because they comprised a sufficient value in a small compass and weight to be a convenient medium. A well-contrived, skilfully-conducted system of banking, connected with one of circulation, is one of the greatest triumphs of national economy; for the interest, as well as the reputation of individuals, is thus pledged in support of the system, and in furtherance of the general industry and prosperity.

CIRCULA'TION, in anatomy, the natural motion of the blood in a living animal, whereby it proceeds from the heart to all parts of the body by the arteries, and returns to the heart by the veins. The *circulation of the blood* is performed in the following manner: the blood is returned to the right auricle of the heart, by the descending and ascending vena cava, which, when distended, contracts and sends its blood into the right ventricle; from the right ventricle it is propelled through the pulmonary artery, to circulate through, and undergo a change in the lungs, being prevented from returning into the right auricle by the closing of the valves, which are situated for that purpose. Having undergone this change in the lungs, it is brought to the left auricle of the heart by the four pulmonary veins, and thence is evacuated into the left ventricle. The left ventricle when distended contracts, and throws the blood through the aorta to every part of the body, by the arteries, to be returned by the veins into the vena cava. It is prevented from passing back from the left ventricle into the auricle by a valvular apparatus; and the beginning of the pulmonary artery and aorta is also furnished with similar organs to prevent its returning into the ventricles.

CIR'CULUS, in anatomy, any round or annular part of the body, as the *circulus oculi,* the orb of the eye.

CIRCUMAM'BIENT, an epithet given to anything that surrounds or encompasses another on all sides; chiefly used in speaking of the air.

CIRCUMCIS'ION, a ceremony in the Jewish and Mahometan religions, performed by cutting off the prepuce, or foreskin. This was a federal rite annexed by God, as a seal to the covenant which he made with Abraham and his posterity, and was accordingly renewed, and taken into the body of the Mosaical constitutions. The time for performing this rite was the eighth day, that is, six full days after the child was born. The Jews distinguished their proselytes into two sorts, according as they became circumcised, or not: those who submitted to this rite were looked upon as children of Abraham, and obliged to keep the laws of Moses: the uncircumcised were only bound to observe the precepts of Noah, and were called *Noachidæ.*

CIRCUM'FERENTOR, a mathematical instrument used by land surveyors for taking angles by the magnetic needle. It is an instrument (where great accuracy is not desired) much used in surveying in and about woodlands, commons, harbours, seacoasts, in the working of coal-mines, &c.

CIR'CUMFLEX, in grammar, an accent serving to note or distinguish a syllable of an intermediate sound between acute and grave: generally somewhat long.

CIRCUMFORA'NEOUS, an epithet for wandering about.——*Circumforaneous musicians,* male and female, are daily seen at the doors of hotels, in France; and sometimes they enter the room, expecting a few sous for their reward. Nor are characters of a similar description by any means rare in London.

CIRCUMGYRA'TION, in anatomy, the turning a limb round in the socket.

CIRCUMLOCU'TION, a paraphrastical

method of expressing one's thoughts, or saying in many words that which might have been said in few.

CIRCUMPO'LAR, an appellation given to those stars which, from their vicinity to the pole, revolve round it without setting.

CIRCUMPOTA'TION, in antiquity, a funeral entertainment which was given in honour of the deceased to the friends that attended. It was afterwards abolished by law.

CIRCUMROTA'TION, the act of rolling or revolving round, as a wheel.

CIRCUMSTAN'TIAL EV'IDENCE, in law, is that kind of evidence obtained from circumstances which necessarily or usually attend facts of a particular nature. It is used to corroborate personal evidence.

CIRCUMVALLA'TION, or *Line of Circumvallation*, in the art of war, is a trench bordered with a parapet, thrown up round the besieger's camp, by way of security against any army that may attempt to relieve the place besieged, or to prevent desertion.

CIR'CUS, in antiquity, a round or oval edifice, used for the exhibition of games and shows to the people: one of these, the Circus Maximus, at Rome, was nearly a mile in circumference.——In modern times, the word is applied to designate a circular enclosure for the exhibition of feats of horsemanship.

CIR'RI, in botany, fine strings or thread-like filaments, by which some plants fasten themselves to walls, trees, &c., such as those of the ivy.——*Cirri*, in ichthyology, certain oblong and soft appendages, not unlike little worms, hanging from the under jaws or mouths of some fishes: these cirri, commonly translated beards, afford marks to distinguish the different species of the fish on which they are found.

CIRRIF'EROUS, in botany, an epithet for a leaf or a peduncle bearing tendrils.

CISAL'PINE, on this side the Alps, as regards Rome. It must be observed, however, that what was *Cisalpine* with regard to the Romans, is *Transalpine* with regard to us.

CISPADANE, on this side the river Po, with regard to Rome; that is, on the south side.

CISTER'CIANS, in church history, a religious order founded in the 11th century by St. Robert, a Benedictine.

CIS'TUS, in botany, the Rock-rose; a genus of the *polyandria-monogynia* class of plants, many of which are beautiful evergreen flowering shrubs, and most of them natives of the southern parts of Europe.

CITA'TION, in ecclesiastical courts, is the same with *summons* in civil courts.—— A *Citation* is also a quotation of some law, authority, or passage from a book.

CITH'ARA, in antiquity, a musical instrument, the precise structure of which is not known.

CITHARIS'TIC, an epithet for anything pertaining to or adapted for the harp.

CITH'ERN, an ancient stringed instrument, supposed to bear a resemblance to the guitar.

CIT'RATE, in chemistry, a neutral salt formed by a union of the citric acid with a base.

CIT'RIC ACID, in chemistry, that property found in the juice of lemons and limes, which gives it the sour taste. This acid by chemical preparation may be converted into crystals, and in that state it can be kept any length of time.

CIT'RINE, a species of very fine sprig crystal, of a beautiful yellow colour, found in columns, and terminating in an hexangular pyramid.

CIT'RON, the fruit of the citron-tree, a large species of lemon. The tree has an upright smooth stem, with a branching head, rising from five to fifteen feet, adorned with large oval spear-shaped leaves. The citron, lime, and lemon, are different varieties of the *citrus medica*, a native of Upper Asia, from whence it was brought into Greece, and afterwards transplanted into Italy. Lemon-juice, which is one of the sharpest and most agreeable of all acids, is used in cookery, confectionery, and various other ways, particularly in medicine, as one of the best remedies for the scurvy with which we are acquainted. Sometimes it is crystallized into a white and acid salt; but what is sold in the shops under the name of essential salt of lemons, for taking out ink-stains and iron-moulds from linen, is only a preparation from the juice of sorrel.

CITY, a large town, incorporated and governed by particular officers. In Great Britain, it means a town having a bishop's see, and a cathedral; but this distinction is not always observed in common discourse, for we say the town of Ely, which is a bishop's see, and the city of Westminster, which at present has no see.——War having rendered it requisite that cities should be defensible posts, the smallness of the space they occupied became a consideration of importance. Their inhabitants were taught to crowd themselves together as much as possible; and among the expedients resorted to was that of building apartments over one another, thereby multiplying the number of dwellings without increasing the superficial magnitude of the place. Trade, too, by requiring a multitude of persons upon one spot, has always been the foundation of what we now call cities. Cities usually possess, by charter, a variety of peculiar privileges; and these charters, though they now sometimes appear to be the supporters of a narrow policy, were, in their institution, grants of freedom at that time nowhere else possessed; and by these the spell that maintained the feudal tyranny was broken.—— CITY, *(civitas)*, among the ancients, was used in synonymous sense with what we now call an imperial city; or, rather, answered to those of the Swiss cantons, the republics of Venice, Genoa, &c., as being an independent state, with territories belonging to it.

CIV'ET, *(zibethum)*, a soft unctuous substance, like musk, the smell of which it resembles, is contained in a bag, growing from the lower part of the belly of the civet-cat.

Civet was formerly in high repute for its medicinal qualities, but is now used only as a perfume.

CIV'ET-CAT, an animal of the fox or weasel species, a native of the Indies and South America,

CIV'IC CROWN, *(corona civica)*, in antiquity, a crown, or garland composed of oak-leaves, given by the Romans to any soldier who had saved the life of a citizen. Various marks of honour were connected with it: the person who received the crown wore it at the theatre; and when he entered, the audience rose up as a mark of respect.

CIV'IL, an epithet applicable to whatever relates to the community as a body, or to the policy and the government of the citizens and subjects of a state. It is opposed to *criminal:* as a *civil* suit, a suit between citizens alone, and not between the state and a citizen. It is also distinguished from *ecclesiastical*, which respects the church; and from *military*, which includes only matters relating to the army and navy.—The popular and colloquial use of the word *civil*, means complaisant, polite.——*Civil Law*, is properly the peculiar law of each state, country, or city; but as a general and appropriate term, it means a body of laws composed out of the best Roman and Grecian laws, comprised in the Institutes, Code and Digest of Justinian, &c., and, for the most part, received and observed throughout all the Roman dominions for above 1200 years. This law is used under certain restrictions in our ecclesiastical courts, as also in the university courts and the court of admiralty.——*Civil List*, the revenue appropriated to support the civil government; also the officers of civil government who are paid from the public treasury. As used in England, it signifies the sum which is granted to every king, at the beginning of his reign, for the support of his court and household, of ambassadors, and of the civil government in general.——*Civil Death*, in law, that which cuts off a man from *civil* society, or its rights and benefits, as banishment, outlawry, &c.; as distinguished from *natural* death.——*Civil War*, a war between people of the same state, or the citizens of the same city.——*Civil Year*, the legal year, or that form of the year which each nation has adopted for computing their time by. The civil year in England and other countries of Europe consists of 365 days for the common year, and 366 days for leap year.——*Civil Architecture*, the architecture which is applied to buildings constructed for the purposes of civil life, in distinction from military and naval architecture.

CIVIL'IAN, a doctor or professor of the civil law; or in a more extended sense, one who is versed in law and government.

CLAMP, in general, something that fastens or binds; as a piece of iron screwed on the corners where boards meet, &c.——In brick-making, a *clamp* is a pile of bricks laid up for burning, in which the end of one brick is laid over another, and a space is left between the bricks for the fire to ascend.——In ship-building, a thick plank on the inner part of a ship's side, used to sustain the ends of the beams.——In joiners' work, to fit a piece of board with the grain, to the end of another piece of board across the grain, is called *clamping* it.

CLAN, a family or tribe, living under one chief. This appears to have been the original condition of the savages of northern Europe; and from this we ought to trace the germ of the feudal system. All the members of a clan held their lands of the chief, followed him to war, and were expected to obey him in peace.——The word *clan* is also sometimes used in contempt, for a sect or society of persons united by some common interest or pursuit.

CLANG, a sharp, shrill sound, implying a degree of harshness in the sound; as, the *clang* of arms. The words *clank* and *clink* denote a more acute and less harsh sound than *clang*.

CLAR'ENCIEUX, the second king at arms, so called from the duke of Clarence, to whom he first belonged; (for Lionel third son to Edward III. having by his wife the honour of Clare, in the county of Thomond, was afterwards declared duke of Clarence; which dukedom afterwards escheating to Edward IV. he made this duke king at arms). His office is to marshal and dispose of the funerals of all baronets, knights, and esquires, on the south side of the Trent.

CLAR'ENDON. The "constitutions of Clarendon," are certain ecclesiastical laws drawn up at Clarendon, near Salisbury. They were sixteen in number, all tending to restrain the power of the clergy, and readily assented to by all the bishops and barons, the archbishop Becket excepted, who opposed them at first, but was afterwards prevailed upon to sign them. The pope Alexander III. declared against and annulled most of them.

CLAR'ICHORD, or CLAV'ICHORD, a musical instrument sometimes called a *manichord*. It has fifty stops or keys, and seventy strings; and is in the form of a spinnet. The tone is soft and sweet; hence it is a favourite instrument with nuns.

CLARE-OBSCURE, CLARO-OBSCURO, Latin; CHIARO-OSCURO, Italian; and CLAIR-OBSCUR, French; a phrase in painting, signifying light and shade. In pictural criticism, it means the relief that is produced by light and shade, independently of colour. In the art itself, it denotes that species of painting or design, in which no attempt is made to give colours to the objects represented, and where, consequently, light and shade are everything.

CLARIFICA'TION, the process of clearing or fining any fluid from all heterogeneous matter or feculence, and is distinguished from filtration by the employment of chemical means; whereas the latter is only a mechanical operation.

CLAR'ION, a kind of trumpet, whose tube is narrower, and its tone more acute and shrill, than that of the common trumpet.

CLA'RY-WATER, a composition of brandy, sugar, clary flowers, and cinnamon, with a little ambergris dissolved in it. It is a cardiac, aud assists digestion.

CLASS, a term applied to the scientific division or arrangement of any subject; as in the Linnæan system, wherein animals, plants, and minerals are divided into classes, each of which is to be subdivided by a regular downward progression, into orders, genera, and species, with occasional intermediate subdivisions, all subordinate to the division which stands immediately above them. Classes are *natural* or *artificial*, according as they are founded on natural relations or resemblances, or when formed arbitrarily.——*Class* also denotes a number of students in a college or school, of the same standing, or pursuing the same studies.

CLASS'ICAL, a term signifying excellent, or of the first class. It is said to owe its origin to the division of the Roman people into classes, the first of which was called, by way of eminence, the *classic*. The word *classical* is also applied to authors of standard authority, particularly the writers among the Greeks and the Romans, whose works are comprehended under the name of *the Classics*.

CLAUSE, in law, an article in a contract or other writing; a distinct part of a contract, will, agreement, charter, &c.——In language, a subdivision of a sentence, in which the words are inseparably connected with each other in sense, and cannot with propriety be separated by a point.

CLAUSTRAL, relating to a cloister or religious house; as, a *claustral* prior.

CLAV'ATED, in botany, an epithet for plants which are club-shaped, or grow gradually thicker towards the top.

CLAV'ICLES, in anatomy, two bones situated transversely and a little obliquely opposite to each other, at the superior and anterior part of the thorax, between the scapula or shoulder-bone, and the sternum or breast-bone.

CLAY, a species of earths which are firmly coherent, weighty, compact, and hard when dry, but stiff, viscid, and ductile to a great degree, when moist; smooth to the touch, not readily diffusible in water, and when mixed, not readily subsiding from it. They become soft by absorbing water, but are so tenacious as to be moulded into any shape, and hence they are the materials of bricks, pottery-ware, &c.

CLE'AVAGE, in mineralogy, a term used in relation to the fracture of minerals which have natural joints and possess a regular structure.

CLECHE, in heraldry, a kind of cross, charged with another cross of the same figure, but of the colour of the field.

CLEDGE, among miners, the upper stratum of fuller's earth.

CLEF, or CLIFF, (derived, through the French, from the Latin *clavis*, "a key,") a character in music, placed in the beginning of a stave, to determine the degree of elevation occupied by that stave, in the general claviary or system, and to point out the names of the notes which it contains in the ine of that clef.

CLEMA'TIS, a climbing shrub, otherwise called Virgin's Bower. The common sort, bearing a bluish flower, is a native of the south of Europe.

CLEPSAM'MIA, an ancient instrument for measuring time by sand, like an hour-glass.

CLEP'SYDRA, a Roman and Grecian time-piece, or water-clock; an instrument to measure time by the fall of a certain quantity of water.

CLER'GY, a general name given to the body of ecclesiastics of the Christian church, in distinction from the laity. The revenues of the clergy were anciently more considerable than at present. Ethelwulf, in 855, gave them a tithe of all goods, and a tenth of all the lands in England, free from all secular services, taxes, &c. The charter whereby this was granted them, was confirmed by several of his successors; and William the Conqueror, finding the bishoprics so rich, created them into baronies, each barony containing at least thirteen knight's fees.

CLERK, a word originally used to denote a learned man, or man of letters; whence the term is appropriated to churchmen, who were called clerks or clergymen: the nobility and gentry being bred to the exercise of arms, and none left to cultivate the sciences but ecclesiastics. In modern usage, the word *clerk* means a writer; one who is employed in the use of the pen, in an office, public or private, either for keeping accounts, or entering minutes. In some cases *clerk* is synonymous with secretary, but not always. A clerk is always an officer subordinate to a higher officer, board, corporation, or private individual; whereas, a secretary may either be a subordinate officer, or the head of an office or department.

CLEW'-LINES, and CLEW'-GARNETS, in marine language, a sort of tackle fastened to the clews of the sails to truss them up to the yard.

CLI'ENT, a person who seeks advice of a lawyer, or commits his cause to the management of one, either in prosecuting a claim, or defending a suit in a court of justice.——Among the Romans, a *client* meant a citizen who put himself under the protection of a man of distinction and influence, who was accordingly called his *patron*.

CLIMAC'TERIC, according to astrologers, is a critical year or period in a person's life. According to some, this is every seventh year, but others allow only those years produced by multiplying 7 by the odd numbers 3, 5, 7, 9, to be climacteral; which years, they say, bring with them some remarkable change with respect to health, life or fortune. The grand climacteric is the 63d year.

CLI'MATE, in a geographical sense, a space upon the surface of the terrestrial globe, contained between two parallels, and so far distant from each other, that the longest day in the parallel nearest the pole

THE STUDY OF THE CLASSICS HAS A MOST SALUTARY INFLUENCE ON THE INTELLECTUAL DEVELOPMENT OF MODERN STUDENTS.

THE ANCIENT CLASSIC WRITERS SPENT THEIR LIVES IN CONSTANT EFFORTS FOR LIBERTY—PHYSICAL, MORAL, AND INTELLECTUAL.

is half an hour longer than that nearest the equator.——In a popular sense, the term climate is given to any country or region differing from another in the temperature of the air; or with respect to the seasons, the quality of the soil, or even the manners of the inhabitants, without any regard to the length of the days, or to geographical position. Thus we say, a warm or cold climate, a genial climate, &c.

CLI'MAX, a figure in rhetoric, consisting of an assemblage of particulars, rising, as it were, step by step, and forming a whole in such a manner that the last idea in the former member becomes the first in the latter, till the climax, or gradation, is completed. Its strength and beauty consist in the logical connection of the ideas, and the pleasure the mind receives from perfect conviction; as may be perceived in the following example: "There is no enjoyment of property without government; no government without a magistrate; no magistrate without obedience; and no obedience where every one acts as he pleases."

CLIN'ICAL, in its literal sense, means anything pertaining to a bed. Thus, a *clinical lecture* is a discourse from notes taken at the bed-side by a physician, with a view to practical instruction in the healing art. *Clinical medicine* is the practice of medicine on patients in hospitals, or in bed. And the term *clinic* was also applied by the ancient church historians, to one who received baptism on his death bed.

CLOA'CA, an ancient common sewer.

CLOCK, a machine for measuring time, called, when first invented, a nocturnal dial, to distinguish it from the sun-dial. This machine consists of wheels moved by weights, so constructed that by a uniform vibration of a pendulum, the hours, minutes, and seconds are measured with great exactness; and it indicates the hour by the stroke of a small hammer on a bell. The invention of clocks has been ascribed to Boethius, about the year 510; but clocks, like those now used, were either first invented, or revived, between two and three centuries ago. The clock measures even 24 hours, but the solar day is unequal, according to the situation of the earth in its orbit, and to the declination of the sun. Hence the clock is sometimes a few minutes faster or slower than the sun.

CLOISTER, the principal part of a regular monastery, consisting of a square, erected between the church, the chapter-house, and the refectory, and over which is the dormitory. In a general sense, *cloisters* mean covered passages, such as were formerly attached to religious houses.

CLOTH, any kind of stuff that is woven or manufactured in the loom, whether it be made of wool, hemp, flax, or cotton.

CLOTHING. Under this head we shall take the liberty of extracting and abridging from the Glasgow edition of the "Conversations Lexicon," a few paragraphs which strike us as being founded on careful observation, and given with a just notion of the importance of the subject. Nothing is more necessary to a comfortable state of existence, than that the body should be kept in nearly a uniform temperature. The chief end proposed by clothing ought to be protection from the cold; and it never can be too deeply impressed on the mind (especially of those who have the care of children), that a degree of cold amounting to shivering cannot be felt, under any circumstances, without injury to the health, and that the strongest constitution cannot resist the benumbing influence of a sensation of cold constantly present, even though it be so moderate as not to occasion immediate complaint, or to induce the sufferer to seek protection from it. This degree of cold often lays the foundation of the whole host of chronic diseases, foremost amongst which are found scrophula and consumption. Persons engaged in sedentary employments must be almost constantly under the influence of this degree of cold, unless the apartment in which they work is heated to a degree that subjects them, on leaving it, to all the dangers of a sudden transition, as it were, from summer to winter. The inactivity to which such persons are condemned, by weakening the body, renders it incapable of maintaining the degree of warmth necessary to comfort, without additional clothing or fire. To heat the air of an apartment much above the ordinary temperature of the atmosphere, we must shut out the external air; the air also becomes extremely rarefied and dry; which circumstances make it doubly dangerous to pass from it to the cold, raw, external air. But in leaving a moderately well-warmed room, if properly clothed, the change is not felt; and the full advantage of exercise is derived from any opportunity of taking it that may occur. The only kind of dress that can afford the protection required by the changes of temperature to which high northern climates are liable, is *woollen*; and those who would receive the advantage which the wearing of woollen is capable of affording, must wear it next the skin; for it is in this situation only that its health-preserving power can be felt. The great advantages of woollen cloth are briefly these:—the readiness with which it allows the escape of the matter of perspiration through its texture; its power of preserving the sensation of warmth to the skin under all circumstances; the slowness with which it conducts heat; and the softness, lightness, and pliancy of its texture. *Cotton cloth* must be esteemed the *next best* substance of which clothing can be made; but *linen* is the *worst* of all the substances in use."

CLOUD, a collection of vapours suspended in the atmosphere; being a congeries chiefly of watery particles, drawn up from the sea and land by the solar or subterraneous heat, or both, in vapour. Clouds are of various kinds according to the prevalence of any one of their component parts, and particularly according to the quantity of electric fluid they contain. Massive round clouds are called *cumulus*; flat long clouds

are called *stratus;* feathery or hairy clouds, *cirrhus;* and when the stratus intersects the cumulus, the combination is called *nimbus*, from its producing rain. The uses of clouds are evident to the commonest observer. From them proceeds the rain which refreshes the earth: and without which its whole surface must be one desert. Clouds are likewise screens interposed between the earth and the scorching rays of the sun, which are often so powerful as to destroy the more tender vegetables. In the less discoverable operations of nature, where the electric fluid is concerned, clouds have a principal share; and they particularly serve as a medium for conveying that subtile matter from the atmosphere to the earth, and from the earth into the atmosphere.

CLOVE, a very pungent aromatic Indian spice; the fruit, or rather the flower, of the clove tree, which grows in the Molucca isles. The tree is of the size of the laurel, and its bark resembles the olive.

CLO'VER-GRASS, a genus of plants called *Trifolium*, trefoil, or three-leaved; of which the species are numerous. The red clover is generally cultivated for fodder and for enriching land. The white clover is also an excellent food for cattle; and from its flowers the bee collects no small portion of its honeyed stores.

CLYSTER, in medicine, a liquid substance injected into the lower intestines, for the purpose of promoting alvine discharges; and at other times for the support and nourishment of patients who cannot swallow aliment.

COACH, a vehicle of pleasure, distinguished from others chiefly from being a covered box hung on leathers. The oldest carriages used by the ladies in England were called *whirlicotes;* and we find that the mother of Richard II., who, in 1360, accompanied him in his flight, rode in a carriage of this sort. But coaches, properly so called, were introduced into England from Germany, or France, in 1580, in the reign of Elizabeth. In 1601, the year before the queen's death, an act was passed to prevent men from riding in coaches, as being effeminate; but in twenty-five years afterwards hackney-coaches were introduced.

COAD'UNATE, in botany, an epithet for several leaves united at the base.

COAL, in mineralogy, a solid inflammable substance, supposed to be of a bituminous nature, and commonly used for fuel. By way of distinction it is called *fossil* coal; and is divided by recent mineralogists into three species, anthracite, or glance coal, black or bituminous coal, and lignite, or brown coal; under which are included many varieties. There is scarcely any substance so useful to mankind as this; and it is dealt out to us with an unsparing hand. It is always found in masses, sometimes in a heap, most frequently in beds, which are usually separated by layers of stones. The principal mines of this useful mineral are those of Newcastle and Whitehaven. The town of Newcastle absolutely stands on beds of coals, which extend to a considerable distance round the place. The principal opening for men and horses to the mines at Whitehaven is by an opening at the bottom of the hill, through a long passage hewn in a rock, which by a steep descent leads down to the lowest vein of coal. The greatest descent is through spacious galleries, which continually intersect each other; all the coal being cut away except large pillars, which, in deep parts of the mine, are three yards high, and twelve square at the base. The mines are sunk to a depth of seven or eight hundred feet, and are extended under the sea to places where, above them, the water is sufficient for ships of very large burden.

COAST, the edge or margin of the land next to the sea; or the country near the sea-shore. It is applicable only to the sea-coast, being never used for the borders or banks of a river.

COAT, a garment worn commonly uppermost. Also, a thin covering laid or done over anything, as a coat of paint, &c.—— In anatomy, the membraneous cover of any part of the body, as the coats of the eye, the stomach, &c.——*Coat of Arms*, in the modern acceptation, is a device, or assemblage of devices, supposed to be painted on a shield; which shield, in the language of heraldry, is called the *field*.——*Coat of Mail*, a piece of armour made in the form of a shirt, and wrought over with a kind of network of iron rings.

COAT'ING, in chemistry, is used principally for the purpose of defending certain vessels from the immediate action of fire: thus, glass retorts, and the inside of some furnaces, are *coated*, or securely covered, with various compositions.——In electricity, it means the covering of electric bodies with conductors, or the latter with the former, or, lastly, electrics with other electrics. Electrics are coated with conductors for the purpose of communicating to, or removing from their surfaces, the electric fluid in an easy and expeditious manner; otherwise an electric body, on account of its non-conducting property, cannot be electrified or deprived of the electric fluid without touching almost every point of its surface with an electrified or other body.

CO'BALT, a mineral of a grayish white, or reddish gray colour, very brittle, and easily reducible to powder. It is never found in a pure state, but usually as a metallic oxyde, combined with arsenic, which is obtained from it in great quantities. The impure oxyde of cobalt is called *zaffer;* but when fused with three parts of siliceous sand and an alkaline flux, it is converted into a blue glass, called *smalt*. Cobalt is used principally to give a permanent blue colour to glass and enamels upon metals, porcelain, and earthenwares.—— *Co'balt-bloom*, acicular arseniate of cobalt.——*Co'balt-crust*, earthy arseniate of cobalt.

COC'COLITE, in mineralogy, a variety of *augite* or *pyroxene*. It is of a greenish hue, and is composed of granular concretions.

BY BEING SMALL COAL, SOME SUPPOSE IT LASTS LONGER; BUT IT RESTRAINS COMBUSTION, MAKES A BAD FIRE, AND WASTES THE HEAT.

THE COAL MINES OF ENGLAND ARE OF DOUBLE THE ANNUAL VALUE OF ALL THE GOLD AND SILVER OF AMERICA.

THROUGHOUT THE WHOLE OF THE COAL STRATA, A VARIETY OF ANIMAL AND VEGETABLE REMAINS ARE CONTINUALLY FOUND.

A PREPARATION OF TIN IS EMPLOYED TO GIVE A BRIGHTNESS TO COCHINEAL AND OTHER ARTICLES USED IN DYEING SCARLET.

COC'CULUS IN'DICUS, an Indian berry, growing on the *Menispermum Cocculus*. It is often unlawfully used as a deleterious ingredient in making malt liquors.

COC'CUS, in entomology, a genus of two-winged insects, the wings of which stand erect, and are only to be found in the males; the rostrum, or trunk, arises from the breast, and the body is setose behind.

COCHINEAL', the *Coccus Cacti*, an insect which infests different plants, but particularly the Nopal or Indian fig-tree. At a suitable time, these insects are taken and put in a pot, where they are confined for some time, and then killed by the application of heat. When formed into a mass, or drug, they become the *cochineal* of the shops, which is used in dyeing crimson and scarlet colours, and for making carmine.

COCH'LEA, the SNAIL-SHELL, a genus of univalve shell-fish, of a spiral figure, and containing only one cell. This is a very comprehensive genus, and therefore subdivided into three series.——*Cochlea*, in anatomy, the internal cavity of the ear; so called from its resemblance to the spiral shape of a snail's shell.

COCHLEA'RIA, in botany, a genus of plants, class 15 *Tetradynamia*, order 1 *Siliculosa*. The species chiefly consist of the various kinds of scurvy-grass.

COCK, *(gallus)*, in ornithology, the male of gallinaceous or domestic fowls, but more especially used for the common dunghill-cock.——An instrument to draw out liquor from a cask, &c.——The part of a musket to which a flint is attached, and by which fire is struck.

COCK-CHA'FER, known also by the name of *May-bug, door beetle*, &c., a species of coleopterous insect, the *Scarabeus melonthela* of Linnæus, is remarkable for the length of its life in the grub or larva state, and for the injury it does to vegetation. The grub remains in the earth for three years before it is transformed into the perfect insect, and is very destructive to the roots of plants.

COCK'ET, a seal belonging to the custom-house: likewise a scroll of parchment, sealed and delivered by the officers of the custom-house to merchants, as a warrant that their merchandize is entered.

COC'KLE, the *Cardium* of Linnæus, a genus of shells the characteristics of which are: shells nearly equilateral and equivalvular; hinge with two small teeth; and prominent ribs running from the hinge to the edge of the valve.

COCK'-PIT, in ships of war, an apartment situated near the after-hatchway, under the lower gun-deck, in which the wounded men are dressed. The fore-cock-pit is a place leading to the magazine passage and the store-room of the boatswain, gunner, and carpenter.

COCK'-ROACH, in entomology, the *Blatta* of Linnæus, a disagreeable and annoying insect, which haunts houses, and is very active by night, when it devours whatever food may lie in its way, and is also very destructive to woollen cloths, &c.

COCK'SWAIN, (contracted into *Coxen*) an officer who has charge of the boat and the boat's crew.

CO'COA, a tree belonging to the genus *Cocos*, of the order of *Palmæ*. It grows in both the East and West Indies, is about sixty feet in height, and produces the fruit called the cocoa-nut, the shell of which is of a woody substance, containing a white fleshy kernel and a sweet refreshing liquor. The nuts, which are from three to seven inches long, hang in clusters on the top of the tree. If the body of the tree be bored, there exudes from the wound a white liquor called palm wine or toddy; the kernels yield a considerable quantity of oil, which is now made available in the manufacture of candles and soap; the leaves are wrought into sacks, hammocks, &c.; and the filaments of the outer coat of the nut are made into cables.

CO'COA, as it is generally called, but more properly CACA'O, or the Chocolate-tree, is a species of the *Theobroma*, growing in the West Indies and many parts of South America. The nuts or seeds, which are numerous, are contained in pods, much resembling a cucumber, that proceed from all parts of the body and larger branches; each pod containing from 20 to 30 nuts, about the size of an almond, and very compactly set. They yield by expression a great deal of oil; but they are cultivated only that they may be employed in the preparation of that excellent beverage cacao, and the manufacture of chocolate, of which they form the principal ingredient.

COCOON', the fibrous or silken cone which caterpillars weave around themselves when they assume the pupa or chrysalis form.

CO'COS, a genus of plants, class 20 *Monæcia*, order 6 *Hexandria*. The species are shrubs and trees bearing large nuts, as the *cocos nucifera*, &c.

COC'TION, in medicine, the reducing aliments to chyle. In surgery, the reducing morbific matter to a healthy state.

COC'ULA, in archæology, a small drinking-cup in the shape of a boat.

COD, or COD-FISH, in ichthyology, the English name of the variegated *gadus*, with three fins on the back, a cirrated mouth, and the upper jaw longest. It inhabits the northern seas, particularly the banks of Newfoundland.

CODE, (from *codex*, a roll or volume), a collection or system of laws. The collection of laws and constitutions made by order of the emperor Justinian is distinguished by the appellation of *code* by way of eminence.——The *Code Napoleon*, or *civil code* of France, proceeding from the French revolution, and the administration of Napoleon while consul, effected great changes in the laws of France. It was a work of great magnitude, and will remain a perpetual monument of the state of things as they then existed in that country.

COD'ICIL, a supplement to a will, containing anything which the testator wishes

THE COIN OF A COUNTRY IS LIKE ITS HIGHWAYS; THOUGH IT PRODUCES NOTHING, IT GREATLY FACILITATES THE TRANSIT OF ITS PRODUCTIONS.

THE REFRESHING PROPERTIES OF COFFEE ARE PRINCIPALLY DERIVED FROM THE LARGE PROPORTION OF NITROGEN WHICH IT CONTAINS.

to add; or any explanation, alteration, or revocation, of what his will contains.

COEFFI'CIENTS, in algebra, such numbers, or given quantities, as are put before letters, or unknown quantities, into which letters they are supposed to be multiplied: thus, in 3 *a*, or *b x*, or *c x x*; 3 is the coefficient of 3 *a*, *b* of *b x*, and *c* of *c x x*.——In fluxions, the *coefficient* of any generating term is the quantity which arises from the division of that term from the generated quantity.

CŒ'LA, in anatomy, the cavities or hollows, as they are called, of the eyes.

CŒ'LIAC, an epithet for what pertains to the belly, or the intestinal canal. Thus, *cœliac artery* is the artery which issues from the aorta just below the diaphragm; the *cœliac vein*, a vein of the *intestinum rectum*; and *cœliac passion*, a flux or diarrhœa of indigested food.

CŒ'NA, the principal meal among the Greeks and Romans. The time of the *cœna*, or supper, was the ninth hour, answering to three o'clock in the afternoon with us, and it consisted of three courses. They made a libation both before and after supper, and concluded the evening with much festivity.

COETA'NEOUS, an epithet denoting, of the same age, or beginning with another. The word *coeval* is synonymous with it; *cotemporary* implies, existing at the same time.

COF'FEE, an evergreen shrub, growing in Arabia and the West Indies. It is seldom more than 16 or 18 feet high: the flowers are of a pure white, and the berries grow in clusters. The use of coffee is said to have been introduced into England in 1652. That which is called Mocha coffee, from Arabia Felix, is accounted the best; but the coffee of Java, Bourbon, and the West Indies, is what we usually obtain, and constitutes an important article of commerce.

COF'FER, a chest or trunk.——In mineralogy, a trough in which tin ore is broken to pieces.——In fortification, a trench cut in the bottom of a dry ditch.——In architecture, a square depression or sinking in each interval between the modillions of the Corinthian cornice.

COF'FER-DAM, in bridge-building, a circular double range of piles rammed with clay, within which the foundations of bridges are laid.

COF'FIN, a case or chest for the reception of a dead body that is to be buried.——In the veterinary art, the whole hoof of a horse's foot above the coronet.

COGNA'TION, in civil law, natural relationship, or that line of consanguinity between males and females, both descended from the same father; as *agnation* is for the line of parentage between males only descended from the same stock.

COGNIZANCE, (pron. *con'izance*), in law, the hearing of a thing judicially. Also, the acknowledgment of a fine.——*Cognizance of Pleas*, a privilege granted by the king to a city or town to hold pleas of all contracts, &c. within the liberty of the franchise.

COGNIZEE', (pron *conizee'*), in law, one to whom a fine is acknowledged, or the plaintiff in an action for the assurance of land by fine.

COGNIZOR', (pron. *conizor'*), one who acknowledges the right of the plaintiff or cognizee, in a fine.

COGNO'MEN, the surname, or family name among the Romans. Thus, in Publius Cornelius Scipio, the name of an eminent Roman, Publius is the *prænomen*, Cornelius the *nomen*, and Scipio the *cognomen* or family name.

COGNO'VIT, in law, a writ by which the defendant admits the judgment against him.

COHESIBIL'ITY, a term opposed to *divisibility*, and denoting the tendency which one part of matter evinces to unite with another part of matter, so as to form, out of different bodies, one common mass.

COHE'SION, in natural philosophy, is distinguished from adhesion, as that species of attraction which, uniting particle to particle, retains together the component parts of the same mass.

COHOBA'TION, in chemistry, the operation of repeatedly distilling the same liquor, or returning the liquor back again upon the same substance, and re-distilling it.

COHORT', a military body among the Romans, consisting of the tenth of a legion, or from five to six hundred men.

COIF, the badge of serjeants of law, who are called serjeants of the coif, from the lawn coif they wear under their caps when they are created serjeants.

COIN, a piece of metal stamped with certain marks, and made current at a certain value. Strictly speaking, coin differs from money as the species differs from the genus. Money is any matter, whether metal, or paper, or beads, or shells, &c. which have currency as a medium in commerce. Coin is a particular species always made of metal, and struck according to a certain process called coining. The British *coinage* is wholly performed at the Tower of London, where there is a corporation for the purpose, under the title of the Mint. The coining engine is now worked by means of complicated machinery, placed in an apartment over the coining room, and connected with the steam engine. To this is attached a contrivance by which it feeds itself with the blanks to be impressed, and removes them the instant they have received the impression; and such is the excellence of the machinery, that one workman may stamp 20,000 pieces in a single day.——*Current coin*, is coin legally stamped and circulating in trade.——*Counterfeit coin*, that which is forged or stamped without authority.

COINDICA'TION, in medicine, a sign or symptom, which, with other signs, assists to show the nature of the disease, and the proper remedy.

COIR, a species of yarn, manufactured from the husk of cocoa-nuts.

COL'CHICUM, or Meadow Saffron, is a bulbous-rooted plant, which grows in various parts of Europe, and which of late years has become quite noted as a remedy for the gout. It should, however, be used with great caution.

COL'COTHAR, called also *crocus martis*, an impure brownish-red oxyde of iron, which remains after the distillation of the acid from the sulphate of iron. It is used in polishing glass and metals. The best sort of polishing powder, called *jewellers' red rouge* or plate powder, is the precipitated oxyde of iron prepared by adding solution of soda to solution of copperas, washing, drying, and calcining the powder in shallow vessels with a gentle heat, till it assumes a deep brown-red colour.

COLD, the sensation produced in animal bodies by the escape of heat, or that which accompanies a transition of the fine vessels of the human body from an expanded to a more contracted state. Great degrees of cold are produced by mixing together substances which dissolve rapidly. The reason of this will appear when it is recollected that in the conversion of solid bodies into fluids caloric is always absorbed. Mixtures to produce artificial cold are generally made of neutral salts and of snow: or of neutral salts, diluted acids, and powdered ice.—— The word *cold* is also in common use, to express that indisposition occasioned by a sudden transition from heat to cold; viz., *catarrh*.

COLEOP'TERA, the first order of insects in Linnæus' zoological system, which includes all those whose wings are guarded by a pair of strong, horny, exterior cases or coverings, under which the wings are folded up when at rest. In common language these insects are called *beetles*; and the order contains an immense number.

CO'LEWORT, a well-known variety of the cabbage, or *brassica* of Linnæus, which grows through the winter.

COL'IC, an appellation given to almost all pains in the abdomen indiscriminately; but it is chiefly known as that disease which is characterised by a spasmodic sensation in the intestines, bilious vomiting, and obstinate costiveness.

COLIPH'IUM, in antiquity, a sort of coarse bread which wrestlers used to eat in order to make them strong and muscular.

COLISE'UM, an elliptical amphitheatre, at Rome, built by Vespasian, in which were statues representing all the provinces of the empire, and in the middle stood that of Rome, holding a golden apple in her hand. This immense structure was 1612 feet in circumference, contained eighty arcades, and would hold 100,000 spectators. Down to the 13th century, this unrivalled monument of ancient grandeur remained almost uninjured; afterwards pope Paul II. took all the stones from it which were used for the construction of the palace of St. Mark, and in later times some other palaces were erected from its fragments. At present, care is taken not to touch the ruins of the Coliseum, but it is gradually crumbling away of itself, and in a few centuries, perhaps, nothing more may be seen of its upper part; the lower part, however, may safely bid defiance to the ravages of time. Benedict XVI. caused a cross to be erected in the centre of the arena, where every Sunday afternoon, Catholic worship is performed. The great object of this magnificent building was to exhibit the brutal spectacles of the gladiators contending with wild beasts. We accordingly read, that on the triumph of Trajan over the Dacians, 11,000 animals were killed in the amphitheatres at Rome; and 1000 gladiators fought during 123 days. The gladiators at first were malefactors, who fought for victory and life; or captives and slaves, who were made to fight for their freedom; but after a time many lived by it as a profession; and these exhibitions continued, with modifications, for above 500 years.—— A very large and most ingeniously constructed building, erected in the Regent's Park, London, is called the Coliseum, or Colosseum. It is divided into three parts, viz. a grand panorama of London, suites of rooms for various kinds of entertainments, and a handsome conservatory. The grand panorama affords many points of view of the vast metropolis, by the ascent of a winding staircase; but for people who would enjoy the sight without the trouble of walking up, an ascending room is provided. It is altogether a wonderful performance, and for extent and accuracy is unrivalled.

CO'LIUS, in ornithology, the Coly, a genus of birds, order *Passeres*. They inhabit the Cape of Good Hope and Senegal.

COLLAP'SE, to close by falling together; as, the fine canals or vessels of the body *collapse* in old age; or, as a balloon collapses when the gas escapes from it.

COL'LAR, in Roman antiquity, a chain put round the neck of slaves that had run away, after they were taken.——In a modern sense, it denotes an ornament consisting of a chain of gold, enamelled, &c., frequently set with ciphers or other devices, with the badge of the order hanging at the bottom, and worn by the knights of several military orders over their shoulders.

COLLAT'ERAL, in genealogy, signifies descending from the same stock or ancestor, but not in a direct line; and is therefore distinguished from *lineal*.——*Collateral security*, in law, is security for the performance of covenants on the payment of money, besides the principal security.

COLLA'TION, in the canon law, the presentation to a benefice, by a bishop, who has it in his own gift or patronage. When the patron of a church is not a bishop, he presents his clerk for admission, and the bishop institutes him; but *collation* includes both presentation and institution. ——COLLATION, in law, the comparison of a copy with its original, to ascertain its conformity; or the report of the officer who made the comparison. Hence, a COLLATOR means one who compares copies or

THE COLISEUM IS SAID TO HAVE BEEN ERECTED IN ONE YEAR BY THE COMPULSORY LABOUR OF 12,000 JEWS AND CHRISTIANS.

THE COLISEUM HAS THREE ROWS OF COLUMNS, ONE ABOVE THE OTHER; THE LOWEST DORIC, THE SECOND IONIC, AND THE UPPER, CORINTHIAN.

manuscripts. And from the same is derived the term COLLATING among printers, by which is meant the examining the whole number of sheets belonging to a book, in order to see if they are all gathered properly.

COL'LECT, a short and comprehensive prayer, particularly such prayers as are appointed with the epistles and gospels in the public service of the Church of England.

COLLECTA'NEA, in literature, notes, observations, or any matter collected from a variety of works.

COLLEC'TIVE, in grammar, an epithet for any noun which comprehends many persons or things; as a *multitude*, a *company*, a *congregation*, an *army*, &c.

COL'LEGE, in its usual, though somewhat limited sense, is a public place endowed with certain revenues, where the several parts of learning are taught, and where the students reside, under a regular discipline. An assemblage of several of these colleges is called a *university*. The establishment of colleges or universities forms a remarkable period in literary history; for the schools in cathedrals and monasteries were confined chiefly to the teaching of grammar; and there were only one or two masters employed in that charge; but in colleges, professors are appointed to teach all the branches of science.——There are colleges of physicians and surgeons, a college of philosophy, a college of heralds, a college of civilians, &c.

COLLE'GIATE CHURCHES, are those that, without a bishop's see, have the ancient retinue of a bishop; such as the church of St. Peter's, Westminster. This was anciently a cathedral; but the revenues of the monastery being vested in the dean and chapter by act of parliament (1 Elizabeth), it became a collegiate church.

COL'LIER, a coasting-vessel employed in carrying coals from one port to another. Also, one who works in a coal mine.

COLLIMA'TION, line of, in a telescope, is that which passes through the tube, and cuts both the focus of the eye-glass and the centre of the object-glass.

COLLIQ'UAMENT, in natural history, an extreme transparent fluid in an egg, observable after two or three days incubation, containing the first rudiments of the chick. It is included in one of its own proper membranes, distinct from the albumen.

COLLIQUATION, in physic, a term applied to the blood, when it loses its crasis or balsamic texture; and to the solid parts, when they waste away, by means of the animal fluids flowing off through the several glands, &c. to an excessive degree, occasioning fluxes and clammy sweats.

COLLIQ'UATIVE, an epithet indicating a morbid discharge of the animal fluids; as a *colliquative* fever, which is accompanied with profuse sweating, &c.

COLLISION, in mechanics, is the meeting or mutual striking of two or more bodies, one of which, at least, is in motion.

COLLOBO'MA, in medicine, the growing together, or gluey adhesion, of the eyelids.

COLLOCA'TIO, in antiquity, a ceremony at the funerals of the Greeks and Romans, which consisted of placing the corpse, laid on a bier, near the threshold of the house, that all might see whether he had met his death by violence or not.

COLLU'SION, in law, a deceitful agreement or compact between two persons to bring an action one against the other for some fraudulent or unlawful purpose.

COLLYR'IUM, in medicine, any fluid application for the eyes.

COLOGNE-EARTH, a substance used in painting, much approaching to umber in its structure, and of a deep brown. It is supposed to be the remains of wood long buried in the earth.

CO'LON, in anatomy, the greater or upper portion of the large intestine.——In grammar, a point marked thus (:) to divide a sentence.

COLONEL, (pron. *cur'nel*), the chief commander of a regiment, whether infantry or cavalry.——LIEUTENANT-COLONEL, the second officer in a regiment, who commands in the absence of the colonel.

COLONNA'DE, a range of pillars running quite round a building.

COL'ONY, a company or body of people removed from their mother-country to a remote province or country, where they form a settlement under the sanction of the government. Also, the place where such a settlement is formed, as the colonies belonging to Great Britain in the East and West Indies, North America, &c.

COL'OPHONITE, in mineralogy, a variety of garnet, of a reddish yellow or brown colour, occurring in small amorphous granular masses.

COL'OPHANY, in pharmacy, black resin, or turpentine boiled in water and dried; or the residuum, after distillation of the ethereal oil of turpentine, after more intense and long continued action of the fire.

COLOQUIN'TIDA, COLOCYNTH, or BITTER APPLE, is the fruit of a wild gourd, the pulp of which is light, spongy, and white; and is remarkable for its intense bitterness. Coloquintida has been known in medicine from the earliest times as one of the most powerful cathartics with which we are acquainted: it is sent us from Syria, particularly from Aleppo.

COL'OCYNTH, the COLOQUINTIDA, above described.

COL'ORATURE, in music, all kinds of variations, trills, &c. intended to make a song agreeable.

COLOS'SUS, a statue of enormous or gigantic proportions. That particularly spoken of under this name, was an Apollo, of the height of 126 feet, erected at Rhodes; the workmanship of Chares, who devoted himself to this object during twelve years. It was placed at the entrance of the harbour, with the right foot standing on one side the land and the left on the other. It was of brass, and is said to have existed nearly fourteen centuries, before the period in which it fell by the shock of an earth-

quake. When the Saracens became possessed of Rhodes, they found the statue in a prostrate state, and sold it to a Jew, by whom 900 camels were laden with the materials.

COL'OUR, in physics, a property inherent in light, (formerly supposed to be inherent in the coloured substance), which by a difference in the rays and the laws of refraction, gives to bodies particular appearances to the eye. The principal colours are red, orange, yellow, green, blue, indigo, and violet. White is not properly a colour; as a white body reflects the rays of light without separating them. Black bodies, on the contrary, absorb nearly all the rays, and therefore black is no distinct colour. But in common discourse, white and black are denominated colours; and all the colours admit of many shades of difference.——*Colours*, in painting, the various tints which are produced by the different mixture and application of certain colouring substances. ——*Colours*, in heraldry, the tinctures with which the field or any part of the escutcheon is distinguished: they are red, blue, black, green, and purple; which the heralds call *gules, azure, sable, vert*, and *purpure*. Tenue or tawny, and sanguine, are not so common. The yellow and white, called *or* and *argent*, are metals, not colours. The metals and colours are sometimes expressed in blazon by the names of precious stones, and sometimes by those of planets or stars.——*Colours* in military affairs, include the banners, flags, ensigns, &c. of all kinds, borne in the army or fleet.

COL'UBER, in zoology, the Viper, a very numerous genus of serpents, distinguished by the belly being covered with a number of scuta, or hard crusts, and the tail with scales. The *Coluber ferus* is found in most parts of Europe; it lives in woods and thickets, and, in breeding time, in the open fields: it is poisonous, but not deadly; it grows to a foot and a half long. The flesh was formerly used in medicine as a restorative. The poisonous matter discharged is a real gum, and perhaps the only gum actually produced and secreted by animals of any kind. Olive oil is the most successful application to the bite of a viper.

COLUM'BIAN, an epithet for anything pertaining to America, from its having been discovered by Columbus.

COL'UMBINE, in botany, a genus of plants of several species. Also the name of the heroine in a pantomine.

COLUM'BIUM, the name of a metal first discovered in an ore or oxyde, in Connecticut.

COL'UMN, in architecture, a cylindrical pillar, or long round body of wood, stone, or iron, which serves either for the support or ornament of a building. It consists of a capital, which is the top or head; the shaft, which is the cylindrical part; and the base, or that on which it rests. Columns are distinguished as to their form into the Tuscan, Doric, Ionic, Corinthian, and Composite. The Tuscan is characterized by being rude, simple and massy; the Doric is next in strength and massiveness to the Tuscan; the Ionic is more slender than the Tuscan and Doric; the Corinthian is more delicate in its form and proportions, and enriched with ornaments; and the Composite is a species of the Corinthian. In strictness, the shaft of a column consists of one entire piece; but it is often composed of different pieces, so united as to have the appearance of one entire piece.——The word COLUMN has also many other meanings; as, a division of a page, which may contain two or more *columns*. A large body of troops drawn up in order; as, a solid *column*. Any body pressing on its base, and of the same diameter as its base; as, a *column* of water, air, or mercury.

COLUMEL'LA, in botany, the central pillar in a capsule, which connects the inside with the seeds, and has the seeds fixed to it all round.——In conchology, the upright pillar in most of the univalve shells.

COLUM'NA, in anatomy, a term applied to different parts: thus the *columna nasi*, is the lowest and fleshy part of the nose which forms a part of the septum; and the *columna oris*, is the same with the uvula.

COLUMNIF'ERÆ, the 37th Linnæan natural order of plants, whose stamens and pistil resemble a pillar in the centre of a flower.

COLU'RES, in astronomy, two great circles supposed to intersect each other at right angles in the poles of the world, and to pass through the solstitial and equinoctial points of the ecliptic. They are hence called the solstitial and equinoctial colures.

CO'MA, or COMA-VIGIL, a preternatural propensity to sleep, or lethargic drowsiness. It is a symptom which often attends acute, burning, and malignant fevers.——*Coma somnolentum*, is when the patient continues in a profound sleep, and when awaked, immediately relapses, without being able to keep open his eyes.——*Coma Berenicis*, in astronomy, a constellation of the northern hemisphere composed of stars near the tail of Leo.——The word *Coma* also denotes the hairy appearance that surrounds a comet, when the earth is between the comet and the sun.

COMA'TA, in medicine, an order of diseases in the class *Neuroses* in Cullen's system, consisting of those disorders in which the power of voluntary motion is suspended.

COMBINA'TION, in chemistry, denotes the intimate union of two or more bodies of different natures, from which a new compound results, differing in its nature from either of the constituents. Thus, an acid united with an alkali, gives a neutral salt, and furnishes a good instance of combination.——*Combination*, in mathematics, is the variation or alteration of any number of quantities, letters, sounds, or the like, in all the different manners possible.——The word *combination* in its general and most popular sense, is equivalent to league or to conspiracy; and may accordingly be used

THE FLAME OF COMBUSTIBLE BODIES MAY BE CONSIDERED AS THE COMBUSTION OF AN EXPLOSIVE MIXTURE OF GAS WITH AIR.

THE SMOKE OF A FIRE IS THE HYDROGEN OF THE COAL RISING IN COMBINATION WITH A PORTION OF CARBON.

either in a laudable sense or in an iniquitous one.

COMBUS'TION, in chemistry, a term which denotes the decomposition of certain substances, accompanied by light and heat. It is an important effect of caloric, but only particular bodies are subject to combustion. In popular language, *combustion* is the process of fire in consuming a body, attended with heat.——*Combustible bodies*, when inflamed, are sources of light and heat: thus sulphur, coal, &c. are combustible bodies, and being raised to a certain degree of temperature, they give out light and heat.

COM'EDY, a dramatic representation of the light, humorous, and pleasant kind, particularly intended to ridicule the follies of men. Scaliger defines comedy to be a dramatic poem, representing the business of life, whose event is fortunate and style familiar. According to Bossu, comedy differs from tragedy in this, that comic writers invent both the names of the persons and the actions which they represent; whereas the tragic writers invent only the latter, taking the former from history. Among us, comedy is distinguished from farce, as the former represents nature as she is, the other distorts and overcharges her; but whether it be to recommend virtue, or to render folly ridiculous, the real intention and effect are amusement.

COM'ET, in astronomy, an opaque, spherical, and solid body, like a planet, but accompanied with a train of light, and performing revolutions about the sun in elliptical orbits, which have the sun in one of the foci. It is divided into the *nucleus* or dense part; the *head*; the *coma*, a faint light surrounding the head; and the *tail*, which is the long train of light by which these bodies are distinguished. When a comet is westward of the sun, and rises or sets before it, the light appears in the morning like a train beginning at the body of the comet, and extending westward and diverging in proportion to its extent; and when the sun and the comet are exactly opposite each other, the earth being between them, the vapour appears to surround it like a fringe or border of hair.

COMETA'RIUM, a machine constructed to represent the revolution of a comet about the sun.

COMETOG'RAPHY, a description of, or discourse upon, comets.

COM'FREY, in botany, a herb whose root abounds in a pure, tasteless mucilage, and is therefore useful as an emollient and demulcent.

COMI'TIA, in Roman antiquity, an assembly of the people, either in the *Comitium* or *Campus Martius*, for the election of magistrates, or consulting on the important affairs of the republic. The people originally gave their votes *viva voce*, but in process of time this was superseded by the use of tablets.

COM'MA, in grammar, a point or character marked thus (,) denoting the shortest pause in reading, and separating a sentence into divisions or members.——In theoretic music, it is a term to show the exact proportions between concords.

COMMANDANT', the commanding officer of a place or of a body of forces.

COMMAND'ER, the chief officer of an army, or one who has the command of a body of men. The Commander-in-Chief in the British army is he who has the supreme command over all the land forces in Great Britain. In the naval service the chief admiral in any port or station is so called.——The *Commander of a Ship*, otherwise called the *Master*, is an officer next in rank to a post captain, who has the command of a ship of war under 18 guns, a sloop, &c.

COMMEN'CEMENT, an annual public assembly of the university of Cambridge; or the day on which degrees are publicly conferred on students who have finished a collegiate education.

COMMEND'AM, in ecclesiastical law, the trust or administration of the revenues of a benefice, given to a layman to hold as a deposit for six months, in order to repairs, &c., or to an ecclesiastic to perform the pastoral duties till the benefice is provided with a regular incumbent. In England, the right of granting benefices *in commendam* is vested in the crown by a statute of Henry VIII.——One who holds a living in commendam is called a *commendatory*.——*Commendatory letters*, are letters sent from one bishop to another in behalf of any of the clergy, &c.

COMMEN'SURABLE, among geometricians, an appellation given to such quantities as are measured by one and the same common measure: thus a yard and a foot are commensurable, as both may be measured by inches.

COM'MENTARY, an explanation of the obscure passages in an author; or an historical narrative, as, the Commentaries of Cæsar.

COMMENTAC'ULUM, in antiquity, a wand which those who were going to sacrifice held in their hand, to make people stand out of the way.

COM'MERCE, in a general sense, is the intercourse of nations in each other's produce or manufactures, in which the superfluities of one are given for those of another, and then re-exchanged with other nations for mutual wants. Commerce is both *foreign* and *inland*. Foreign commerce is the trade which one nation carries on with another; inland commerce, or inland trade, is the trade in the exchange of commodities between citizens of the same nation. The benefits of commercial intercourse have been felt and admitted from the earliest times; but they have never been so highly appreciated, or carried to such an extent as at present. It gives a stimulus to industry; supplies mankind with enjoyments to which they would otherwise be strangers, tends greatly to obliterate unfounded prejudices between nations; excites a spirit of laudable competition among all classes; enables one country to profit by the inventions of another; diffuses the blessings of civiliza-

NEITHER HOME TRADE NOR FOREIGN COMMERCE CAN ENRICH A NATION WHEN THE SUPPLY OF GOODS IS GREATER THAN THE DEMAND.

IN CONSEQUENCE OF THE UNION WITH IRELAND, IN 1801, ONE HUNDRED IRISH MEMBERS WERE ADDED TO THE BRITISH PARLIAMENT.

BY THE REFORM BILL OF 1832, THE NUMBER OF MEMBERS WAS 500 FOR ENGLAND AND WALES, 53 FOR SCOTLAND, AND 105 FOR IRELAND.

tion to the most remote corners of the earth: enlarges the powers and faculties of the mind; and advances human knowledge by the improvements which it carries into every art and science. On the other hand, it cannot be denied that it has contributed to unjust aggressions, and that the peace and welfare of man have often been made subservient to commercial avarice. Yet much as the evils attributed to commerce have been deplored by some moral writers, we cannot but adopt the sentiments of one who says, "To commerce, with all its mischiefs, with all its crimes, committed upon every shore, its depopulation of fields, and corruption of cities, to commerce we must attribute that growing intimacy between the members of the human race from which great benefits have redounded, and greater still may spring."

COM'MISSARY, in a general sense, one who is sent or delegated to execute some office or duty, as the representative of his superior.——In military affairs, an officer, who has the charge of furnishing provisions, clothing, &c. for an army. There are various separate duties devolving on commissaries, and they have names accordingly: as, the *commissary-general*, who is at the head of the department; *deputy-commissaries*, &c.——In ecclesiastical law, an officer of the bishop who exercises spiritual jurisdiction in distant parts of the diocese.

COMMISSA'RIATE, the whole body of officers in the commissary's department.

COMMIS'SION, in law, the warrant, or letters patent by which one is authorized to exercise jurisdiction.——In military affairs, the warrant or authority by which one holds any post in the army: in distinction to the inferior or non-commissioned officers. ——In commerce, the order by which any one traffics or negotiates for another; also the per centage given to factors and agents for transacting the business of others.

COMMIS'SIONER, a person authorised by commission, letters-patent, or other lawful warrant, to examine any matters, or execute any public office, &c.

COM'MISSURE, in anatomy, any suture or juncture, particularly the corners of the lips where they meet together; and also certain parts of the brain.

COMMIT'MENT, is the sending a person to prison by warrant or order, either for a crime or contumacy.

COMMIT'TEE, certain persons elected or appointed, to whom any matter or business is referred, either by a legislative body, or by any corporation or society.—— A *Committee of Parliament*, signifies a certain number of members appointed by the house to proceed on some specific business. The whole house frequently resolves itself into a committee, in which case, each member has a right to speak as often as he pleases. When the house is not in committee, each gives his opinion regularly, and is only allowed to speak once, unless to explain himself.——*Standing committees* are such as continue during the existence of the legislature. *Special committees* are appointed to consider and report on particular subjects.

COMMOD'ITY, in commerce, any merchandize which a person deals in.——*Staple commodities*, such wares and merchandizes as are the proper produce or manufacture of the country.

COM'MODORE, an officer in the British navy, invested with the command of a detachment of ships of war destined for a particular purpose.——The *Commodore of a convoy* is the leading ship in a fleet of merchantmen, and carries a light in her top to conduct the other ships.

COM'MON, a tract of ground, or open space, the use of which is not appropriated to an individual, but belongs to the public, or to a number. The right which a person has to pasture his cattle on land of another, or to dig turf, or catch fish, or cut wood, or the like, is called *common* of pasture, of turbary, of piscary, and of estovers.

COMMON PRAY'ER, the liturgy, or public form of prayer prescribed by the church of England to be used in all churches and chapels, and which the clergy are enjoined to use, under a penalty.

COMMON COUN'CIL, the council of a city or corporate town, empowered to make by-laws for the government of the citizens. It is generally used in speaking of a court in the city of London, composed of the lord mayor, aldermen, and a certain number of citizens called common-councilmen. The city of London is divided into 24 wards; the chief magistrate of each ward has the title of alderman; the 24 aldermen, with the lord mayor, form the court of aldermen; and certain inhabitants chosen out of each ward, for the purpose of assisting the aldermen with their advice in public affairs, form the court of *common council*.

COMMON-HALL', a court in the city of London, at which all the citizens, or such as are free of the city, have a right to attend.

COMMON LAW, the law that receives its binding force from immemorial usage and universal reception, in distinction from the *written* or statute law; and which chiefly originated in judicial decisions founded on natural justice and equity, or on local customs.

COMMON-PLACE BOOK, a register of such thoughts and observations as occur to a person of reading or reflection.

COMMON-PLEAS', one of the superior courts at Westminster-hall, where pleas or causes are heard between subject and subject. A writ of error, in the nature of an appeal, lies from this court to the court of Queen's Bench.

COM'MONS, the lower house of Parliament, consisting of the representatives of cities, boroughs, and counties, chosen by men possessed of the property or qualifications required by law. This body is called the *House of Commons*; and may be regarded as the basis of the British constitution. The origin of this assembly ought, perhaps, to be attributed to the necessity under which the

first Edward perceived himself of counteracting a powerful aristocracy. The feudal system had erected a band of petty monarchs from whom the crown was in perpetual danger. It is to the struggles of these men with regal authority, in the course of which, in order to strengthen their opposition, they were obliged to make a common cause with the people, that the existence of English liberty may be attributed. In a word, the House of Commons arose on the ruins of the feudal fabric, gained ground as that decayed, pressed on its weaker parts, and, finally, levelled it with the dust. Though each member is elected by a distinct body of people, he is, from the moment of his election, the representative not of those particular persons only, but of the kingdom at large; and is to consider himself not merely as the organ through which his constituents may speak, but as one who having been intrusted with a general charge, is to perform it to the best of his judgment. In performance of this great function, his liberty of speech is bounded only by those rules of decency of which the house itself is the judge; and while, on the one hand, he is free to propose what laws he pleases, on the other, he is exposed, as a private man, to the operation of the laws he makes. This assembly is composed of six hundred and fifty-eight members; and though many small boroughs were disfranchised by the Reform Bill, the elective franchise was given to several places of rising importance, and a variety of alterations took place by adding to the number of representatives of counties, &c., so that the total number of members remains the same.

COMMONWEALTH', in a general sense, applies to the social state of a country, without regarding its form of government. ——In the usual, though more restricted sense, a republic, or that form of government in which the administration of public affairs is open to all with few, if any, exceptions.

COMMU'NION, the act of communicating in the sacrament of the eucharist, or the Lord's supper.——*Communion Service*, the office for the administration of the holy sacrament in the church of England.——*Communion Table*, the table erected at the east end of a church, round which the communicants kneel to partake of the Lord's supper.

COMMU'NITY, a society of people living in the same place, under the same laws and regulations, and who have common rights and privileges. History shows that the establishment of communities has been one of the greatest advances in human improvement; and they have proved, in different ages, the cradle and the support of freedom.

COMMUTA'TION, in law, the change of a penalty or punishment from a greater to a less; as when death is commuted for transportation or imprisonment.

COM'PANY, in a commercial sense, a society of merchants, mechanics, or other traders, joined together in a common interest. The mechanics of incorporated towns are thus erected into companies. The term is also applied to large associations set on foot for the purposes of commerce; as, the East India Company; a banking or insurance company, &c. When companies do not trade upon a joint stock, but are obliged to admit any person properly qualified, upon paying a certain fine, and agreeing to submit to the regulations of the company, each member trading upon his own stock, and at his own risk, they are called *regulated companies;* when they trade upon a joint stock, each member sharing in the common profit or loss, in proportion to his share in the stock, they are called *joint-stock companies.*——In military affairs, a small body of foot, consisting usually of a number from 60 to 100 men, commanded by a captain, who has under him a lieutenant and ensign.——Also, the whole crew of a ship, including the officers.

COM'PACT, a word denoting an agreement or contract, but generally applied in a political sense; as, a compact or agreement entered into between nations and states for any particular object.

COMPAR'ATIVE ANAT'OMY, is that branch of anatomy, or extension of the art of dissection, which anatomists have practised for the purpose of comparing the structure of all organized bodies with one another. It is otherwise called the anatomy of beasts, and sometimes zootomy, and named *comparative* in relation to that of the human body. The number of its discoveries is highly curious and instructive.

COMPART'MENT, in architecture, a proportionable division in a building; or some device marked in an ornamental part of the building.——In horticulture, a design composed of several different figures, disposed with symmetry to adorn a parterre.——*Compartments*, in heraldry, are partitions and quarterings of the escutcheon, when the arms of several families are borne in one and the same coat, in consequence of marriages, &c.

COMPAR'ISON, in a general sense, the consideration of the relation between two persons or things, when opposed and set against each other, by which we judge of their agreement or difference.——*Comparison of ideas*, among logicians, that operation of the mind whereby it compares its ideas one with another, in regard of extent, degree, time, place, or any other circumstance, and is the ground of relations.——*Comparison*, in rhetoric, a figure by which two things are considered with regard to a third, which is common to them both; as, a hero is like a lion in courage. Here courage is common to hero and lion, and constitutes the point of resemblance.

COM'PASS, or the MARINER'S COMPASS, an instrument used by mariners to point out the course at sea. It consists of a circular box, containing a card or fly, on which are drawn the several points of the compass; and the magnetic needle, which has the property of turning one of its ends to the north pole. The box is covered with glass, to prevent the motion of the card from being disturbed by the wind. The

BY THE AID OF THE MARINER'S COMPASS, THE WHOLE WORLD HAS BEEN BROUGHT TOGETHER, AND BECOME ONE VAST COMMERCIAL COMMONWEALTH.

utility of this instrument results from the magnetic virtue of the needle, through which it constantly places itself in a direct line from pole to pole; a small declination peculiar to various parts of the world excepted.——*A pair of compasses*, an instrument used in describing circles, measuring figures, &c., consisting of two pointed legs or branches, made of iron, steel, or brass, joined at the top by a rivet, on which they move. There are also compasses of three legs, cylindrical, spherical, compasses, &c.

COMPENSA'TION, in civil law, a sort of right, whereby a person, who has been sued for a debt, demands that the debt may be compensated with what is owing him by the creditor, which, in that case, is equivalent to payment.——*Compensation balance*, in a watch, is a contrivance by means of which the errors occasioned by the variation of temperature may be corrected by varying the diameter of the balances.

COMPERTO'RIUM, a judicial inquest in the civil law, made by delegates or commissioners, to find out and relate the truth of a cause.

COM'PLEMENT, in astronomy, the distance of a star from the zenith; or the arch comprehended between the place of the star above the horizon, and the zenith.——*Complement of an Arc*, in geometry, what an arc wants of 90 degrees, or the quadrant of a circle; thus the complement of forty degrees is fifty.——The word is also used to denote the full or complete number; as, a company has its *complement* of men.

COM'PLEX TERMS, and COMPLEX IDEAS, in logic, are such as are compounded of several simple ones.

COMPLEXION, among physicians, the temperament, habitude, and natural disposition of the body; but, in general use, the word means the colour of the skin.

COMPO'SING, that branch of the art of printing which consists in taking the types or letters from the cases, and arranging them in such an order as to fit them for the press. The instrument in which they are adjusted to the length of the lines is called a *composing-stick*.

COMPOSI'TÆ, the 21st natural order in the Linnæan botanic system, comprehending the plants with compound flowers, as the dandelion, sun-flower, &c.

COMPOSITE ORDER, in architecture, the last of the five orders of columns; so called because its capital is *composed* out of those of the other columns. It is also called the Roman or Italic order, from having been invented by the Romans. It is generally ranked after the Corinthian, either as being the next richest, or the last invented.

COMPOSITE NUMBERS, such numbers as can be measured exactly by a number exceeding unity, as 6 by 2 or 3; so that 4 is the lowest composite number. Composite numbers between themselves, are those which have a common measure besides unity; as 12 and 15, both which are measured by 3.

COMPOSI'TION, in a general sense, the putting together, and uniting of several things, so as to form of the whole one mass or compound.——*Composition of ideas*, an act of the mind, whereby it unites several simple ideas into one conception, or complex idea.——In literature, the act of inventing or combining ideas, furnishing them with words, arranging them in order, and committing them to writing.——In logic, a method of reasoning, whereby we proceed from some general self-evident truth, to other particular and singular ones. This method of reasoning is opposed to *analysis*, which begins with first principles, and, by a train of reasoning from them, deduces the propositions or truths sought; but *composition* or *synthesis* collects the scattered parts of knowledge, and combines them into a system, so that the understanding is enabled distinctly to follow truth through its different stages of gradations. ——In music, the art or act of forming tunes, either to be performed vocally or instrumentally.——In painting, the putting together the several parts of a picture, so as to set off the whole to the best advantage. ——In commerce, an agreement entered into between an insolvent debtor and his creditor, by which the latter accepts a part of the debt in compensation for the whole. ——In chemistry, the combination of different substances, from which results a compound substance differing in properties from either of its component parts. Thus water is a composition of hydrogen and oxygen, which are invisible gases.——*Composition of motion*, is an assemblage of several directions of motion, resulting from several powers acting in different though not opposite directions.

COM'POST, in husbandry, several sorts of soils or earths and other matters mixed together, in order to make a particularly fine kind of mould for fertilizing land.

COM'POUND, a term in botany, variously applied. Thus, a *compound flower* consists of several distinct florets, inclosed in a common receptacle: a *compound stem* is one that divides into branches: a *compound leaf* connects several leaflets in one petiole; a *compound umbel* is one which has all its rays or peduncles bearing small umbels at the top.——In computation, *compound interest* is interest upon interest; when the interest of a sum is added to the principal, and then bears interest.——In algebra, *compound quantities*, are such as are joined by the signs + and —, plus and minus, and expressed by more letters than one, or by the same letters unequally repeated: thus $a+b-c$, and $bb-b$, are compound quantities.

COMPRESSIBILITY, in physics, that property in a solid or fluid of yielding to the pressure of another body or force, so as to be brought into a smaller compass.

COMPRESSION, in surgery, a diseased state of the system, arising from the pressure of something on the brain.

CONCATENA'TION, a term chiefly used in speaking of the mutual dependence of second causes upon each other.

LORD BACON SAYS, THAT TEARS ARE THE EFFECTS OF THE "COMPRESSION" OF THE MOISTURE OF THE BRAIN, UPON DILATATION OF THE SPIRITS.

CON, in language, a Latin inseparable preposition or prefix to other words. Ainsworth remarks that *con* and *cum* have the same signification, but that *cum* is used separately, and *con* in composition.——In the phrase *pro* and *con*, for and against, *con* denotes the negative side of a question.

CON'CAVE GLASSES, in optics, such as are ground hollow, and are usually spherical, though they may be of any other figure. The apparent place of objects seen through concaves is always brought nearer to the eye, which is the reason they are used by short-sighted persons.

CONCA'VO-CON'CAVE, hollow or concave on both surfaces.

CONCA'VO-CON'VEX, concave on one side, and convex on the other.

CONCEN'TER, to meet in a point, or common centre; used of converging lines, or other things that meet in a point.

CON'CENTRATE, to bring nearer to each other; as, to concentrate particles of salt by evaporating the water that holds them in solution; or to concentrate rays of light into a focus.

CONCEP'TACLE, in botany, a pericarp of one valve, opening longitudinally on one side and having the seeds loose in it.

CONCEN'TRIC, an epithet for figures having one common centre.

CONCEP'TION, in logic, the simple apprehension or perception which we have of anything, without proceeding to affirm or deny any thing about it.

CONCER'TO, a piece of music consisting of several parts that are all to be performed at the same time.——*Concerto-grossi*, the grand chorus of a concert, or those places where all the several parts perform or play together.

CONCES'SION, in rhetoric or debate, the yielding, granting, or allowing to the opposite party some point or fact that may bear dispute, in order to show that even admiting the point conceded, the cause can be maintained on other grounds.

CON'CHA, a genus of bivalve shells, comprising the oyster, chama, mussel, heart-shell, pecten, &c.——Concha, in anatomy, the larger cavity of the external ear, situated before the *meatus auditorius*, or passage into the internal ear.

CON'CHITE, a petrified shell, or conch.

CON'CHOID, in geometry, the name of a curve, used by Archimedes and other ancients in the construction of solid problems. Sir Isaac Newton observes that he prefers it before other curves, or even the conic sections, in the construction of cubic and biquadratic equations, on account of its simplicity.

CONCHOID'AL, in mineralogy, having convex elevations and concave depressions like shells; as a *conchoidal* fracture.

CONCHOL'OGY, the study or science of shells, or that branch of natural history which treats of testaceous animals, or such animals as have a permanently testaceous covering, which are comprehended under the *testacea* in the Linnæan system. Shells consisting of a single piece are called *univalves*, those of two parts *bivalves*, and those of many parts *multivalves*. Between bivalve and multivalve no distinction is drawn, shells consisting of not more than two such parts being called multivalve, without any regard to the number. Linnæus begins with the multivalves and the most complex structure, and ends with those of the simplest form.

CONCHOM'ETER, an instrument for measuring shells.

CON'CIATOR, in glass works, the person who weighs and proportions the salt or ashes and sand, and who works and tempers them.

CONCIN'NOUS, in music, an epithet for a performance in concerts, which is executed with delicacy, grace, and spirit.

CONCIONATO'RES, in law, the common-councilmen of the city of London.

CONCLAMA'TIO, in antiquity, the funeral cry over the body of a deceased person previous to its being burnt; by which it was expected to recall, as it were, the soul of the deceased from everlasting sleep.

CON'CLAVE, the place in which the cardinals of the Romish church meet for the election of a pope. It consists of a range of small cells or apartments standing in a line along the halls or galleries of the Vatican.——*Conclave* is also used for the assembly or meeting of the cardinals when shut up for the election of a pope.

CONCOC'TION, in medicine, the process by which food is turned into chyle, or otherwise prepared to nourish the body.

CON'CORD, in music, the union of two or more sounds in such a manner as to render them agreeable to the ear. Concord and harmony are, in fact, the same thing, though custom has applied them differently; for as concord expresses the agreeable effects of two sounds in consonance, so harmony expresses the agreement of a greater number of sounds in consonance.——In grammar, that part of syntax which treats of the agreement of words in a sentence.——In law, an agreement between the parties in a fine, made by leave of the court.

CONCORD'ANCE, a dictionary of the Bible, in which every word is given with references to the book, chapter, and verse, in which it occurs.

CONCORD'AT, a treaty or public act of agreement between the pope and any prince, relative to some collation of benefices.

CON'CRETE, in natural philosophy, signifies a body made up of different principles, or any mixed body: thus, soap is a factitious concrete, or a body mixed together by art; and antimony is a natural concrete, or a mixed body, compounded in the bowels of the earth.——*Concrete*, in logic, is used in contradistinction to *abstract*.

CONCRE'TIONS, (Morbid), in animal economy, hard substances that occasionally make their appearance in different parts of the body, as well in the solids as in those cavities destined to contain fluids: in the first place they are denominated concretions or *ossifications*; in the other, *calculi*.——In chemistry, the condensation of any fluid substance into a solid state.

CONDENSA'TION, the act whereby a body is rendered more dense, compact, and heavy. Hence condensation stands opposed to dilatation or rarefaction.

CONDENS'ER, a pneumatic machine by which a volume of air may be reduced into a much smaller space.

CONDI'TION, in law, a clause in a bond or other contract containing terms or a stipulation that it is to be performed, and in case of failure, the penalty of the bond is to be incurred.——We speak of a good *condition* in reference to wealth and poverty, or to health and sickness, &c. Or, we say, —a nation with an exhausted treasury is not in a *condition* to make war; religion affords consolation to man in every *condition* of life.——*Conditional propositions*, in logic, such as consist of two parts connected together by a conditional particle. ——*Conditional syllogism*, a syllogism where the major is a conditional proposition.

CON'DOR, an extremely large kind of vulture, measuring with the wings extended from twelve to sixteen feet. It preys on birds, lambs, or kids, and has strength to bear off a calf. It is a native of South America.

CONDUC'TOR in electrical experiments, a term used to denote those substances which are capable of receiving and transmitting electricity, in opposition to electrics, in which the electric fluid may be excited or accumulated. If a conductor received or imbibed the electrical action, it would be like a water-pipe made of absorbing material; but every surface is a conductor, exactly in the proportion in which its parts do not receive and exhaust the electrical action.——Bodies which repel it, or into which it will not pass, are called *non-conductors*.——CONDUCTOR OF LIGHTNING, a pointed metallic rod fixed to the upper parts of buildings to secure them from the effects of lightning.

CON'DUIT, a subterraneous or concealed aqueduct. The ancient Romans excelled in them, and formed the lower parts, whereon the water ran, with cement of such an excellent quality, that it has become as hard as the stone itself which it was employed to join.——*Conduits*, in modern times, are generally pipes of wood, iron, or pottery, for conveying the water from the main spring, or reservoirs, to the different places where it is required.

CONDU'PLICATE, in botany, an epithet for that which is doubled or folded over or together; as the leaves of a bud.

CON'DYL, in surgery, a protuberance on the end of a bone; a knuckle.

CON'DYLOID, in anatomy, the projecting soft end, or process of a bone.——The *condyloid process* is the posterior protuberance at the extremities of the under jaw; an oblong rounded head, which is received into the fossa of the temporal bone, forming a moveable articulation. The anterior is called the *coronoid process*.

CONE, in geometry, a solid figure having a circle for its base, and its top terminating in a point or vertex, like a sugar-loaf.—— A *right cone*, is when its axis is perpendicular to its base, and its sides equal. It is formed by the revolution of a right-angled plane triangle about one of its sides.—— *Cone*, in botany, the fruit of several evergreen trees, as of the fir, cedar, cypress; so called from its conical shape. It is composed of woody scales that are usually open, each of which has a seed at the end.——In conchology, a beautiful sort of shell inhabited by the limax. Shells of this sort mostly bear the highest price of any, one species being valued as high as a hundred pounds.

CONFARREA'TION, in antiquity, a ceremony observed by the Romans in their nuptial solemnities. It consisted in the offering up some pure wheaten bread, and rehearsing at the same time a certain formula in presence of the high-priest and at least ten witnesses.

CONFEC'TION, a sweetmeat or anything prepared with sugar: it also signifies a liquid or soft electuary, of which there are various sorts.

CONFEC'TOR, an officer in the Roman games, whose business was to kill any beast that was dangerous.

CONFED'ERACY, in law, a combination of two or more persons to do some damage or injury to another, or to commit some unlawful act.

CONFEDERA'TION, a league, or compact, for mutual support, particularly of princes, nations, or states.

CONFER'VA, in botany, a genus of plants of the *cryptogamia* class; consisting of oblong, capillary filaments, divided into joints of a globular figure.

CONFES'SION, in a legal sense, the acknowledgment of something prejudicial to the person making the declaration. A confession, according to law, must never be divided, but always taken entire; nor must a criminal be condemned upon his own confession, without other concurring proofs. ——In theology, a public declaration of one's faith, or the faith of a public body. Also a part of the Liturgy, in which an acknowledgment of guilt is made by the whole congregation.——*Auricular confession*, a private confession or acknowledgment of one's sins made by each individual in the Romish church to the priest or father confessor. It is so called because it is made by whispering in his ear.——Among the Jews, it was a custom, on the annual feast of expiation, for the high priest to make confession of sins to God in the name of the whole people.

CONFES'SOR, a Roman catholic priest, who hears confessions, and is empowered to grant absolution to those who confess.—— The seat, or cell, wherein the priest or confessor sits to hear confessions, is called the *confessional*.

CONFIGURA'TION, in astrology, the aspects of the planets at a certain time, by which they are pretended to aid or oppose each other.

CONFIRMA'TION, the act or ceremony in the Christian church of laying on of hands, by which baptized persons are confirmed in their baptismal vows. This cere-

SOOT ACTS AS A "CONDUCTOR" FOR LIGHTNING; THE FIRE-SIDE IS THEREFORE AN UNSAFE PLACE DURING A THUNDER-STORM.

A COPPER ROD IS A BETTER MATERIAL FOR A "LIGHTNING CONDUCTOR" THAN ONE OF IRON, FROM ITS BEING LESS LIABLE TO FUSION.

mony is performed by the bishop; and the antiquity of it is, by all ancient writers, carried as high as the apostles, upon whose example and practice it is founded.——*Confirmation*, in law, an assurance of title, by the conveyance of an estate or right *in esse*, from one person to another, by which a possession is made perfect, &c.——*Confirmation*, in rhetoric, the third part of an oration, wherein the orator undertakes to prove the truth of the proposition advanced in his narration.

CONFISCA'TION, in law, the condemnation and adjudication of goods or effects to the public treasury, as the bodies and effects of criminals, traitors, &c.

CON'FLUENCE, the meeting or junction of two or more streams of water; also, the place of their meeting.

CON'FLUENT, in botany, united at the base; or growing in tufts, as *confluent* leaves.——In medical science, running together, and spreading over a large surface of the body, as the *confluent* small-pox.

CONFORMA'TION, the particular texture or structure of a body, or disposition of the parts which compose it.——*Mal-conformation*, in anatomy, denotes some defect in the first rudiments, whereby a person is born either crooked, or with some viscera unduly proportioned, &c.

CONFORM'IST, in ecclesiastical concerns, one that conforms to the established church; the seceders or dissenters from which are called *Non-conformists*.

CON'GE, in architecture, a mould in form of a quarter round, or a cavetto, which serves to separate two members from one another; such as that which joins the shaft of the column to the cincture; called also *apophyge*.

CONGE D'ELIRE, (French), in ecclesiastical affairs, the king's permission to a dean and chapter in the time of a vacancy, to choose a bishop.

CONGELA'TION, such a change produced by cold in a fluid body, that it quits its former state, and becomes congealed. It differs from crystalization in this: in congelation the whole substance of a fluid may become solid; in crystalization, when a salt is formed, a portion of liquid is left.

CON'GER, an eel of an extraordinary size, and extremely voracious, which preys on carcases, and other fish. It is common on the Cornish coast, sometimes growing to the length of ten feet, and weighing a hundred pounds.

CONGE'RIES, a collection of several particles or bodies united into one mass or aggregate.

CONGES'TION, a collection of humours in an animal body, hardened into a tumour; or an accumulation of blood in a particular part.

CON'GIARY, in Roman antiquity, a present of wine or oil, given to the people by their emperors, and so called from the *congius*, wherewith it was measured out to them. Sometimes, however, the congiary was made in money or corn.

CON'GIUS, a liquid measure of the ancient Romans, containing the eighth part of the amphora, or rather more than a gallon.

CONGLO'BATE GLAND, in anatomy, a single or lymphatic gland wrapt up in a fine skin, admitting only an artery and a lymphatic vessel to pass in, and a vein and excretory canal to come out.

CONGLOM'ERATE, in botany, an epithet for flowers growing on a branching peduncle or foot-stalk, on short pedicles, closely compacted together.——In mineralogy, a sort of pudding-stone, composed of pebbles of quartz, flint, siliceous slate, &c.——In anatomy, a *conglomerate gland* is composed of many smaller glands, whose excretory ducts unite in a common one, as the liver, pancreas, kidneys, &c.

CONGLUTINA'TION, the act of gluing or fastening together by means of some tenacious substance.

CONGREGA'TIONALISTS, in church history, a sect of Protestants who reject all church government, except that of a single congregation, which, they maintain, has the right to choose its own pastor and govern itself.

CON'GRESS, an assembly of envoys, commissioners, deputies, &c. from different courts, who meet to concert measures for their common good, or to adjust their mutual concerns. Having exchanged their credentials, the envoys of the different powers carry on their negotiations directly with each other, or by the intervention of a mediator, either in a common hall, or in their own residences by turns, or, if there is a mediator, in his residence. These negotiations are continued either by writing or by verbal communication, until the commissioners can agree upon a treaty, or until one of the powers dissolves the congress by recalling its minister.——*Congress of the United States of America*. The assembly of senators and representatives of the several states of North America, forming the legislature of the United States, is designated, in the constitution of the general government, by this title. It consists of a senate and a house of representatives, each constituting a distinct and independent branch.—The *house of representatives* is chosen every second year, by the people of the several states; and the voters and electors are required to have the same qualifications as are requisite for choosing the members of the most numerous branch of the state legislature of the state in which they vote. Each state, however small its population, is entitled to at least one representative; but upon the whole population there cannot be more than one for every 30,000 persons. No person can be a representative who shall not have attained the age of twenty-five years, and have been seven years a citizen of the United States, and who shall not, when elected, be an inhabitant of that state in which he shall be chosen. No other qualifications are required.—The *senate* is composed of two senators from each state, who are chosen by the legislature of the state for six years. They are divided into

REMOVES IN LESS SUBJECTION OF CONGELATION THAN ANY OTHER METAL; IT WAS LONG THOUGHT CAPABLE OF RESISTING ANY DEGREE OF COLD.

FLUIDS ARE SEPARATED FROM THE BLOOD IN THE LIVER, AND FROM THE OTHER "CONGLOBATE" AS WELL AS "CONGLOMERATE" GLANDS.

three classes, so that one-third thereof is, or may be, changed by a new election every second year. No person can be a senator who is not thirty years of age, and has not been nine years a citizen of the United States, and is not, when elected, an inhabitant of the state for which he is chosen. The times, places, and manner of holding elections for senators and representatives, are appointed by the state legislatures. Each house determines the rules of its own proceedings, and has power to punish its members for disorderly conduct. Neither house, during the session of congress, can, without the consent of the other, adjourn more than three days, nor to any other place than that in which the two houses shall be sitting. The senators and representatives are entitled to receive a compensation, provided by law, for their services, from the treasury. They are also privileged from arrests, except in cases of treason, felony, or breaches of the peace, during their attendance at the session of their respective houses, and in going to and returning therefrom. The foregoing outline of their duties and privileges may be sufficient for the general reader, if to it we add, that the rules and practice of the British House of Commons form the basis of their proceedings, modified from time to time, as each house deems fit.

CON'GREVE ROCK'ET, so named from its inventor, the late Sir W. Congreve, is a formidable weapon of destruction, consisting of a tubular case of copper or iron, filled with combustibles, which are impelled with resistless force against the hostile ranks of an army, or the walls of a fortress. The Congreve rockets were first used in the attack of Boulogne in 1806. The *carcass rockets*, as those for bombardment are called, are armed with strong iron conical heads, pierced with holes, and containing a substance as hard and solid as iron itself, which, when once inflamed, is inextinguishable, and scatters its burning particles in every direction. When this substance is consumed, the ball explodes like a grenade. The rocket is projected horizontally, and whizzes loudly as it flies through the air. They were at first considered a most important invention, but experience has shewn that in the field they are much less efficient than the common artillery, and in sieges do less injury than red-hot shot and bombs.

CON'IC SECTIONS, in geometry, such curve lines as are produced by the mutual intersections of a plane and the surface of a solid cone. In different positions of the plane there arise five different figures or sections, viz. the triangle; the circle; the ellipse; the parabola; and the hyperbola: the last three are peculiarly called Conic Sections; to investigate the properties of which is the business of *Conics*, and this depends on a knowledge of geometry plane and solid.

CONIF'ERÆ, the 51st Linnæan natural order of plants, with cone-shaped flowers, as the fir, juniper, &c. Hence the term *coniferous* is applied to all trees bearing cones.

CONISSA'LÆ, an old term for a class of fossils, naturally and essentially compounded, not inflammable, nor soluble in water, found in detached masses, and formed of crystaline matter debased by earth.

CO'NITE, a mineral of an ash or greenish gray colour, which becomes brown by exposure to the air. It occurs massive or stalactitic; and is found in Saxony and Iceland.

CO'NIUM, Hemlock, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*; the flower of which is compound; the particular ones consisting of five unequal and cordated petals.

CON'JUGATE, in botany, an epithet for a pinnate leaf, which has only one pair of leaflets.——In geometry, a *Conjugate axis* is that which crosses another axis.——*Conjugate diameter*, the shortest axis of an ellipsis.——*Conjugate hyperbolas*, hyperbolas having the same axis, but in contrary order.

CONJUGA'TION, in anatomy, is applied to a pair of nerves arising together, and serving the same operation, sensation, and motion.——*Conjugation*, in grammar, the distribution of the several inflections or variations of a verb, in their different voices, moods, tenses, numbers, and persons.

CON'JUGAL RIGHTS. The restitution of conjugal right is a species of matrimonial suit, which may be brought either by the wife or husband against the party who is living in a state of separation.

CONJUNC'TION, in astronomy, the meeting of two or more stars or planets, in the same degree of the zodiac. Conjunction is either true or apparent. *True conjunction* is when a right line, drawn from the eye through the centre of one of the bodies, would pass through that of the other. *Apparent conjunction*, is when the two bodies do not meet precisely in the same point, but are joined with some latitude. The moon is in conjunction with the sun, when they meet in the same point of the ecliptic, which happens every month; and eclipses of the sun are always occasioned by the conjunction of the sun and moon in or near the nodes of the ecliptic. ——*Conjunction*, in grammar, an undeclinable word, or particle, which serves to join words and sentences together.

CON'NATE, in botany, an epithet for leaves, filaments, and anthers: thus *folium connatum*, two leaves so united at their bases as to have the appearance of one leaf, as in the garden honeysuckle.

CONNI'VENT, in botany, an epithet denoting closely united or converging together.——*Connivent valves*, in anatomy, those wrinkles, cellules, and vascules, which are found in the inside of the two intestines, *ilium* and *jejunum*.

CO'NOID, in geometry, a solid formed by the revolution of a conic section about its axis.——In anatomy, a gland found in the third ventricle of the brain called *pin-*

CONGREVE ROCKETS HAVE OFTEN BEEN MADE SUBSERVIENT TO THE CAUSE OF HUMANITY, IN CASES OF SHIPWRECK NEAR THE COAST.

POMPEY AND CESAR WERE TWO STARS OF SUCH MAGNITUDE, THAT THEIR "CONJUNCTION" WAS AS FATAL AS THEIR OPPOSITION.

calis, or the pineal gland, from its resemblance to a cone or pine-apple.

CONNOISSEU'R, a critical judge or master of any art, particularly of painting, sculpture, and the belles lettres.

CONOPE'A, in botany, a genus of plants, class 14 *Didynamia*, order 2 *Angiospermia*. Of this there is only one species, the *conopea aquatica*, a native of Guiana.

CON'QUEST, the right over property or territory acquired in war. It presupposes a just war, and is generally admitted as a part of the law of nations. Conquest may respect either persons or things: it may apply to a whole nation, or to a single town or province: and it may be temporary or permanent. Where persons are not found in arms, but are included as inhabitants of a town or province which has surrendered, they are treated generally as subjects. The original allegiance to their own government is suspended, and they come under the implied obligation to the conqueror, to submit to his orders, and to demean themselves, for the time, as faithful subjects. Under such circumstances, the conqueror generally leaves them in possession of their property, and punishes them only for rebellious or traitorous conduct. It is not usual, in modern times, to change the fundamental laws of a conquered country; but the sovereign power of the conqueror so to do is conceded by the law of nations.

CONSANGUIN'ITY, the relation which subsists between persons who are sprung from the same stock or common ancestor, in distinction from affinity or relation by marriage. It terminates in the sixth or seventh degree, except in the succession to the crown, in which case it is continued to infinity. Marriage is prohibited by the church to the fourth degree of consanguinity inclusive.

CON'SCIENCE, in ethics, a secret testimony of the soul, whereby it gives its approbation to things that are naturally good, and condemns those that are evil. Some writers term conscience the "moral sense," and consider it as an original faculty of our nature; others allege that our notions of right and wrong are not to be deduced from a single principle or faculty, but from various powers of the understanding and will.

CON'SCIOUSNESS, the knowledge of sensations and mental operations, or of what passes in one's own mind.

CON'SCRIPT, in Roman antiquity, an appellation given to the senators of Rome, who were called *conscript-fathers*, on account of their names being entered in the register of the senate.——In the French armies, an enrolled soldier, or recruit.

CONSCRIP'TION, the enlisting the inhabitants of a country capable of bearing arms, by a compulsory levy, at the pleasure of the government. The name is derived from the military constitution of ancient Rome. Under the consulship, all persons capable of bearing arms were obliged, under penalty of losing their fortune and liberty, to assemble in the Campus Martius, or near the capitol, where the consuls, seated in their curule chairs, made the levy by the assistance of the legionary tribunes. The consuls ordered such as they pleased to be cited out of each tribe, and every one was obliged to answer to his name, after which as many were chosen as were wanted.——France, in the beginning of the revolution, declared it the duty and honour of every citizen to serve in the army of his country. Every French citizen was born a soldier, and obliged to serve in the army from sixteen to forty years of age: from forty to sixty he belonged to the national guard. Every year the young men of the military age were assembled, and distributed in the different military divisions; and it was decided by lot who, among the able-bodied men of suitable age should take arms. Thus it was that those prodigious masses were so quickly raised, and sent to the field of slaughter.

CONSECRA'TION, the act of devoting and dedicating anything to the service and worship of God. Among the ancient Christians, the consecration of churches was performed with a great deal of pious solemnity. In England, churches have been always consecrated with particular ceremonies, the form of which was left to the discretion of the bishop.——*Consecration* was also a religious rite among the Romans, by which they set any person or thing apart for sacred purposes, as their high-priests; or made it sacred, or a fit object of divine worship; as the emperors, their wives, or children, who were in this manner enrolled among the number of their gods. This was sometimes called *apotheosis*, but on medals it is distinguished by the word *consecratio*, with an altar or some other sacred symbol.

CONSENT', in the animal economy, an agreement or sympathy by which one affected part of the system affects some distant part. This *consent of parts* is supposed to exist in, or be produced by the nerves; and the affections to be communicated from one part to another by means of their ramifications and distribution through the body.

CONSEC'TARY, in geometry, some consequent truth obtained from a demonstration.

CON'SEQUENCE, that which follows as an inference of truth and reason, from admitted premises or arguments. Thus "every rational being is accountable to his Maker;" man is a rational being; the *consequence* then must be, that man is accountable to his Maker.

CONSERV'ATOR, an officer appointed for the security and preservation of the privileges of some cities, corporations, and communities. The ancient office of *conservator of the peace* is now performed by all judges and magistrates, but particularly by what we now term *justices of the peace*.

CONSERV'ATORY, a term sometimes used for a green-house. It is, properly, a large green-house for exotics, in which the plants are planted in beds and borders, and

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IF GOODS ARE IMPORTED INTO A CONQUERED COUNTRY, WITH THE CONSENT OF THE CONQUEROR, THEY ARE NOT LIABLE TO FORFEITURE AFTERWARDS.

not in tubs or pots, as in the common greenhouse.——In various parts of Italy and France there are musical schools, called *conservatories*, which are expressly intended for the scientific cultivation of musical talents, and from which many first-rate composers, as well as vocalists, have attained their proficiency.

CON'SERVE, in pharmacy, a form of medicine contrived to save the flowers, herbs, roots, fruits, or simples, as nearly as possible in their natural fresh state.

CONSIDERA'TION, in law, the material cause or ground of a contract, without which the party contracting would not be bound. A consideration is either express or implied; *express*, when the thing to be given or done is specified; *implied*, when no specific consideration is agreed upon, but justice requires it, and the law implies it: as when a man labours for another, without stipulating for wages, the law infers that he shall receive a reasonable *consideration*.

CONSI'GNMENT *of goods*, in commerce, is the delivering or making them over to another: thus, goods are said to be consigned to a factor, when they are sent to him for sale, &c. He who consigns the goods is called the *Consi'gnor*; and the person to whom they are sent is the *Consignee'*.

CONSIST'ENCE, or CONSIST'ENCY, that state of a body in which its component parts remain fixed. Also, congruity and uniformity in opinions and actions.

CONSISTO'RIUM, in antiquity, a council-house, or place of audience.

CONSIST'ORY COURT, the place or court in which the session or assembly of ecclesiastical persons is held by the bishop or his chancellor.

CONSOLIDA'TION, in the civil law, signifies the uniting the possession or profit of land with the property, and vice versâ. In the ecclesiastical law, it is the uniting two benefices into one by assent of the ordinary, patron, and incumbent.——*Consolidation*, in surgery, the action of uniting broken bones, or the lips of a wound, by means of applications.

CON'SOLS, in commerce, funds formed by the *consolidation* (of which word it is an abbreviation) of different annuities, which had been severally formed into a capital. [See FUNDS.]

CON'SOLE, in architecture, a bracket or shoulder-piece: or an ornament cut upon the key of an arch, which has a projecture, and on occasion serves to support little cornices, figures, busts, and vases.

CON'SONANT, a letter so named because it is considered as being sounded only in connection with a vowel. But some consonants have no sound, even when united with a vowel, and others have a very imperfect sound: hence some are called *mutes*, and others *semi-vowels*.

CONSONAN'TE, in music, an Italian epithet for all agreeable intervals.

CONSPIR'ACY, a combination of men for an evil purpose; or an agreement between them to commit some crime in concert; as, a *conspiracy* against the government.——In law, it signifies an agreement between two or more, falsely to indict, or procure to be indicted, an innocent person of felony.

CON SPIR'ITO, in music, an Italian phrase, denoting that the part is to be played with spirit.

CON'STABLE, a civil officer, anciently of great dignity, as the Lord High Constable of England, and also the constables or keepers of castles, &c. It is now the title of an officer under the magistrates for the preservation of the peace, whose duty principally consists in seizing and securing persons guilty of tumultuary offences. There are high constables and petty constables; the former are chosen at the court leets of the hundred over which they reside, or in default of that, by the justices of the quarter-sessions, and are removable by the same authority that appoints them. The petty constables are chosen by the jury of the court-leet, or if no court is held, they are appointed by two justices of the peace.——The Lord High Constable of England had the care of the common peace, in deeds of arms, and matters of war. His power was so great and so improperly used, that it was abridged by Richard II., and was afterwards forfeited in the person of Edward Stafford, duke of Buckingham, in 1521.

CON'STAT, a certificate given out of the exchequer to a person who intends to plead or move for a discharge of anything in that court. The effect of it is to show what appears upon the record, respecting the matter in question.

CONSTELLA'TION, an assemblage or system of several stars, expressed or represented under the name and figure of some animal or other object, as a bear, a ship, and the like; whence they have derived those appellations which are convenient in describing the stars. The division of the heavens into constellations is very ancient, probably coeval with astronomy itself. Modern astronomers divide the whole starry firmament into three parts, viz. 1. The constellations in the zodiac; 2. Constellations north of the zodiac; and 3. Constellations south of the zodiac. The constellations in the zodiac are Aries; Taurus; Gemini; Cancer; Leo, Virgo; Libra; Scorpio; Sagittarius; Capricornus; Aquarius; Pisces. Many young persons have found an easy mode of remembering the names and order of the twelve signs by the aid of the following lines; and therefore, although they have neither novelty nor elegance to recommend them, their insertion here may not be altogether useless:

The *ram*, the *bull*, the heavenly *twins*,
And next the *crab* the *lion* shines,
The *virgin* and the *scales*,
The *scorpion*, *archer*, and *sea-goat*,
The man that holds the *watering-pot*,
And *fish* with glittering tails.

CONSTITU'ENT, in politics, one who by his vote constitutes or elects a member of parliament.——*Constituents*, in physics, the elementary or essential parts of any substance.

CONSTITU'TION, in politics, any form or principle of government, regularly constituted. Constitutions are either democratic, aristocratic, or of a mixed character. They are, 1. *Democratic*, when the fundamental law guarantees to every citizen equal rights, protection, and participation, direct or indirect, in the government, such as the constitutions of the United States of America, and of some cantons of Switzerland. 2. *Aristocratic*, when the constitution establishes privileged classes, as the nobility and clergy, and entrusts the government entirely to them, or allows them a very disproportionate share of it: such a constitution was that of Venice. 3. *Of a mixed character;* to which latter division belong some monarchial constitutions, which recognize the existence of a sovereign whose power is modified by other branches of government, of a more or less popular cast. Of this kind is the BRITISH CONSTITUTION. It assigns the making of laws to the sovereign, and the Houses of Lords and Commons, the sovereign being at the same time the executive power and personal representative of the nation: the House of Lords being a court of appeal from the Courts of Law; and the House of Commons, the originator of all taxes and financial grants, for the use of the executive. It has been truly said, that "it is not absolutely essential to the existence of a constitution, that it should be producible in a visible form. The period of time when the foundations of the present English government were laid by the association of the people in their original character cannot, indeed, be ascertained. Many of the laws which are in use to this day in Great Britain, may be traced back to the remotest period of antiquity; and the origin even of the institution of juries, an institution so congenial to the genuine spirit of freedom, is lost in the obscurity of the fabulous ages. The constitution of Great Britain is a constitution of *principles*, not of *articles;* and however frequently it may have been violated by tyrants, monarchical, aristocratical, or democratical, the people have always found it expedient to restore the original foundation, while, from time to time, they have been successful in improving and ornamenting the building."——By the word CONSTITUTION, is also meant, a particular law, ordinance, or regulation made by the authority of any superior; as, the novel *constitutions* of Justinian and his successors; the *constitutions* of Clarendon, &c.——*Constitution*, in medicine, the temperament of the whole body, arising from the quality and proportion of the parts. In this sense we speak of a robust or feeble constitution, a cold, phlegmatic, or sanguine constitution, &c.

CONSTRIC'TOR, in anatomy, an appellation given to several muscles on account of their contracting or closing some of the orifices of the body; as the *Constrictor labiorum*, a muscle which constitutes the very substance of the lips and draws them up as in kissing; or the *Constrictor nasi*, a muscle arising above the *dentes incisores* of the upper jaw, and terminating in the *alæ* of the nose.

CONSTRUC'TION, in a general sense, the manner of putting together the parts of a building, or of a machine, &c.——In grammar, syntax, or the proper arrangements of words in a sentence. Also, the manner of understanding the arrangement of words, or of understanding facts: thus we say, "let us give the author's words a rational and consistent *construction*.

CONSUA'LIA, in Roman antiquity, a festival instituted by Romulus, and dedicated by him to Neptune, whom he termed Consus, or the god of counsel, in consequence of his successful scheme on the Sabine virgins.

CONSUBSTAN'TIAL, in theology, an epithet signifying of the same substance: thus, in the articles of the Church of England, Christ is declared *consubstantial*, or of one substance with the Father.

CONSUBSTANTIA'TION, a tenet of the Lutheran church, the members of which maintain that after consecration of the sacramental elements, the body and blood of our Saviour are substantially present, together with the substance of the bread and wine, which is called consubstantiation, or impanation.

CON'SUL, in the Roman commonwealth, the title of the two chief magistrates, whose power was, in a certain degree, absolute, but who were chosen only for one year. The authority of the two consuls was equal; yet the Valerian law gave the right of priority to the elder, and the Julian law to him who had the greater number of children; and this was generally called *consul major*, or *prior*. In the first ages of Rome they were elected from patrician families; but in the year of Rome 388, the people obtained the privilege of electing one of the consuls from their own body, and sometimes both were plebeians.——In modern usage, the name *consul* is given to an officer appointed to reside in a foreign country, to protect the interests of trade, and to aid his government in any commercial transactions with such country.

CONSULTA'TION, a council for deliberation; as a *consultation* of physicians was called.

CONSUMP'TION, in medicine, a word of very extensive signification, implying all disorders that bring decay or waste upon the constitution. But it is more particularly the disease called *phthisis pulmonalis*, a disorder seated in the lungs, attended with hectic fever, cough, &c. Hence the word *consumptive* is used to denote the incipient state of that disease, or to a constitution predisposed to it.

CONTA'GION, that subtile matter which proceeds from one diseased person and communicates the disease to another; as in cases of small-pox, malignant fevers, &c., which are often communicated without contact.

CON'TENTS, any thing or things held, included, or comprehended within a limit

or line; as, the contents of a cask or bale, the contents of a book, &c.——In geometry, the area or quantity of matter or space included in certain lines.

CON'TEXT, the parts of a discourse which precede or follow the sentence quoted; for instance, the sense of a passage of Scripture is often illustrated by the *context*.

CON'TINENT, in geography, a great extent of land, not disjoined or interrupted by a sea; or a connected tract of land of great extent, as the Eastern or Western continent.——The *continental* powers, those whose territories are situated on the continent of Europe.

CONTINEN'TAL SYS'TEM, a term given to a plan devised by Napoleon to exclude this country from all intercourse with the continent of Europe; thereby to prevent the importation of British manufactures and commerce, and thus to compel the English government to make peace upon the terms prescribed by the French ruler. The history of Napoleon's continental system begins with the decree of Berlin of Nov. 21, 1806, by which the British islands were declared to be in a state of blockade; all commerce, intercourse, and correspondence were prohibited; every Englishman found in France, or in any country occupied by French troops, was declared a prisoner of war; all property belonging to Englishmen, fair prize, and all trade in English goods entirely prohibited. Great Britain immediately directed reprisals against the Berlin decree; prohibiting all neutral vessels from sailing from one port to another belonging to France, or one of her allies, &c. This was met by counter-reprisals; and for a long time a fierce and most annoying system was carried on for the annihilation of British commerce; the effects of which are still felt, from the rival products and manufactures on the continent to which the system gave rise.

CONTORTÆ, one of Linnæus' natural orders, including plants with a single twisted petal. Thus we say, a *contorted* corolla when the edge of one petal lies over the next in an oblique direction.

CONTORTION, in medicine, a twisting or wresting of a limb or member of the body out of its natural situation; partial dislocation.

CONTOUR', in painting, sculpture, &c., the outline, or that line which defines or terminates a figure.

CONTOURNE', in heraldry, an epithet for a beast, standing or running with his face to the sinister side, being always supposed to look to the right.

CON'TRA, a Latin preposition signifying *against*, which is used as a prefix to many English words.

CONTRABAND, in commerce, is a term applied to such goods as are prohibited to be imported or exported, either by the laws of a particular state, or by special treaties. ——By the ancient law of Europe, a ship conveying any contraband article was liable to confiscation as well as the article. But in the modern practice of the courts of admiralty of this and other countries, a milder rule has been adopted, and the carriage of contraband articles is attended only with the loss of freight and expenses, unless when the ship belongs to the owner of the contraband cargo, or when the simple misconduct of conveying such a cargo has been connected with other aggravating circumstances.

CON'TRA-BAS'SO, in music, Italian for thorough-bass. Also, the name of the instrument called a double bass.

CON'TRACT, a covenant or agreement between two or more persons with a lawful consideration or cause which binds the parties to a performance.——*Usurious Contract*, is an agreement to pay more interest for money than the law allows.

CONTRACTILE FORCE, that property or power inherent in certain elastic bodies, whereby, when extended, they are enabled to draw themselves up again to their former dimensions.

CONTRAC'TION, in a general sense, the diminishing the extent or dimensions of a body.——In surgery, the shrinking up of the muscles or arteries.——In grammar, the reducing two syllables into one, by the omission of a letter or syllable.

CONTRAINDICA'TION, in medicine, an indication, from some peculiar symptom or fact, that forbids the method of cure which the general tenor of the disease requires.

CONTRAPUNT'IST, in music, one skilled in counterpoint.

CON'TRAST, in painting, the due placing of the different parts and objects of a figure, that they may be suitably opposed to each other.

CONTRAVALLA'TION, *line of*, in fortification, a trench guarded with a parapet thrown round a place by the besiegers, to defend themselves against the sallies of the garrison.

CONTRAYER'VA, the genus of plants *Dorstenia;* all low herbaceous plants, natives of the warm climates of America, and useful as diaphoretics.

CONTRE, in heraldry, an epithet given to several bearings, on account of their cutting the shield contrary and opposite ways: thus we meet with *contre-bend, contre-chevron, contre-pale*, &c.

CONTRIBU'TION, in a general sense, the act of giving to a common stock. In a military sense, impositions upon a country in the power of an enemy, which are levied under various pretences, and for various purposes, usually for the support of the army.

CONTRO'LLER, in law, an overseer or officer appointed to control or verify the accounts of other officers.

CON'TUMACY, in law, a refusal to appear in court when legally summoned, or disobedience to its rules and orders.

CONVALES'CENCE, the insensible recovery of health and strength after disease.

CONVALLA'RIA, in botany, a genus of

BY THE ACT 1 WILLIAM AND MARY, DISSENTERS MAY ASSEMBLE FOR RELIGIOUS WORSHIP, PROVIDED THE DOORS BE NOT LOCKED, BARRED OR BOLTED.

the *hexandria-monogynia* class of plants; comprehending the lily of the valley, and a few other similar plants.

CONVEN'TICLE, a private assembly or meeting, for the exercise of religion; the word was at first an appellation of reproach to the religious assemblies of Wickliffe, in the reigns of Edward III. and Richard II., and is now usually applied to a meeting of dissenters from the established church.—— As the word *conventicle*, in strict propriety, denotes an unlawful assembly, it cannot be justly applied to the assembling of persons in places of worship, which are licensed according to the requisitions of law.

CONVEN'TION, in law, an extraordinary assembly of the estates of the realm.——In military affairs, an agreement entered into between two bodies of troops opposed to each other; or an agreement previous to a definitive treaty.——*National convention*, the name of the assembly by which the government of France was conducted during a period of the revolution.

CONVER'GING, tending to one point. ——*Converging lines*, in geometry, lines which occasionally approximate.——*Converging rays*, in optics, those rays that proceed from different points of an object, and incline towards one another until they meet. ——*Converging series*, in mathematics, is that in which the magnitude of the several terms gradually diminishes.

CON'VERSE, in mathematics, an opposite proposition: thus, after drawing a conclusion from something supposed, we invert the order, making the conclusion the supposition or premises, and draw from it what was first supposed.

CONVER'SION, in a theological sense, that change in man by which the enmity of the heart to the laws of God, and the obstinacy of the will are subdued, and are succeeded by supreme love to God and his moral government; and a reformation of life.——*Conversion of equations*, in algebra, the reducing of a fractional equation into an integral one.——*Conversion of a proposition*, in logic, is a changing of the subject into the place of the predicate, and still retaining the quality of the proposition.

CON'VEX, anything rising or swelling on the exterior surface into a spherical or round form; as, a *convex* lens or mirror.

CONVEY'ANCE, in law, a deed or instrument by which lands, &c., are conveyed or made over to another.

CONVEY'ANCER, one who professes to draw deeds, mortgages, and conveyances of estates. This profession requires great knowledge of the law, and a solid and clear understanding; for on conveyancing the security of property greatly depends.

CONVIV'IUM, in antiquity, a banquet or entertainment given to a friendly party.

CON'VICT, in law, a person found guilty of a crime alleged against him, either by the verdict of a jury, or other legal decision.

CONVIC'TION, the act of proving guilty of an offence charged against a person by a legal tribunal. Also, the state of being sensible of guilt; as, by *conviction* a sinner is brought to repentance.

CONVOCA'TION, an assembly of the clergy of England, which at present is merely nominal. Its province is stated to be the enactment of canon-law, subject to the licence of the king; and the examination and censuring of all heretical and schismatical books and persons; but from its judicial proceedings lies an appeal to the king in chancery, or his delegates. It is held during the session of parliament, and consists of an upper and a lower house: in the upper sit the bishops, and in the lower the inferior clergy, who are represented by their proctors, and all the deans and archdeacons; in all, 143 divines.

CON'VOLUTED, in botany, an epithet denoting that one part is rolled on another; as the sides or margins of nascent leaves in plants.

CONVOL'VULUS, Bindweed; a genus of plants of many species. Class 5 *Pentandria*, order 1 *Monogynia*.

CON'VOY, ships of war which accompany merchantmen in time of war, to protect them from the attacks of the enemy. ——By land, any body of troops which accompany provision, ammunition, or other property for protection.

CONVUL'SION, *(spasmus)*, in medicine, a preternatural and violent contraction of the membraneous and muscular parts, arising from a spasmodic stricture of the membranes surrounding the spinal marrow, and the nerves distributed from it.

CO'NUS, in conchology, a genus of animals, class *Vermes*, order *Testacea*. These cones inhabit the ocean, and are generally found on rocky shores: many of the shells are extremely beautiful.

COOM, a term applied to the soot that gathers over an oven's mouth; also for that black, greasy substance, which works out of the wheels of carriages.

COOT, in ornithology, a fowl of the genus *Fulica*, frequenting lakes and other still waters. It makes its nest among rushes, with grasses and reeds, floating on the water.

COPA'IBA, BALSAM OF, a liquid resinous juice flowing from incisions made in the stem of a tree called *Copaifera officinalis*, growing in South America. It is of the consistence of oil, and as a medicine is corroborating and detergent.

CO'PAL, improperly called gum copal, a gum of the resinous kind, the concrete juice of a tree, called *rhus copallinum*, which grows in South America. Copal greatly resembles amber in appearance: it is hard, transparent, and odoriferous, and makes an excellent varnish.

CO'PECK, a small Russian coin, equal to about one farthing English.

COPER'NICAN SYSTEM, that system of the universe which was anciently taught by Pythagoras, and afterwards revived by Copernicus, a Polish astronomer. According to this system, the sun is supposed to be placed in the centre, and all the other bodies to revolve round it in a particular

THE BEST COPAL IS HARD AND BRITTLE, EASILY REDUCIBLE TO A FINE POWDER OF A LIGHT LEMON COLOUR, AND BEAUTIFULLY TRANSPARENT.

order; which theory is now universally adopted, under the name of the Solar System.

CO'PING, in masonry, the stone covering on the top of a wall.

COP'PER, one of the six primitive metals, of a pale red colour tinged with yellow. Copper is not unfrequently found native, sometimes in small and slender fibres, and sometimes in little globular and irregular masses; but it is most frequently found in the state of ore. Next to gold, silver, and platina, it is the most ductile and malleable of the metals, and it is more elastic than any metal except steel, and the most sonorous of all the metals. Copper in sheets is much used for covering the bottoms of ships, for boilers and other utensils: mixed with tin it forms bell-metal; with a smaller proportion, bronze; and with zinc, it forms brass, pinchbeck, &c.——Great Britain has various copper-mines, in Cornwall, Devonshire, Wales, &c., but particularly in the first. Though known long before, the Cornish copper-mines were not wrought with much spirit till last century. From 1726 to 1735, they produced, at an average, about 700 tons per year of pure copper; during the ten years from 1776 to 1785, they produced at an average 2,650 tons. In 1798, the produce exceeded 5000; and it now amounts to about 12,000 tons, worth, at 100*l.* a ton, no less than 1,200,000*l.* sterling! In 1768, the famous mines in the Paris mountain, near Amlwch, in Anglesea, were discovered. The supplies of ore furnished by them were for a long time abundant beyond all precedent; but for many years past the productiveness of the mine has been declining; and it now yields comparatively little copper. At present, the entire produce of the copper mines of England, Wales, Scotland, and Ireland, may be estimated at about 15,000 tons; and Great Britain, instead of being, as formerly, dependent on foreigners for the greater part of her supplies of this valuable metal, has for many years past been one of the principal markets for the supply of others.

COP'PERAS, sulphate of iron, commonly called green vitriol; a salt of a peculiar astringent taste, and of various colours, though most usually green. If sulphuric acid be diluted with water, and poured upon iron, much effervescence will be perceptible; the metal will be dissolved, and the solution, when evaporated, will exhibit the sulphate of iron, or common copperas, which is a neutral salt in a very impure state. Copperas is the basis of many dyes: it gives a fine black, though it rather subjects the material to decay, unless used with extreme caution, the least excess occasioning the cloth, &c. to rot very soon.

COPPER-PLATE, a plate of copper on which figures are engraven; also the impression taken from that plate.——*Copper-plate Printing* is performed by means of what is called a rolling-press. The engraved plate is covered with ink, made of oil and Frankfort black, then cleanly wiped on the smooth parts, and laid on wet soft paper; and on being passed between two cylinders with great force, the impression of the engraved part is perfectly transferred to the paper.

COP'PICE, or COPSE, a wood of small growth, cut at certain times, and used principally for fuel.

COP'PLE-DUST, powder used in purifying metals.

COP'PLE-STONES, lumps and fragments of stone brought from adjacent cliffs, and rounded by the continual action of the waves.

COPTIC, the language of the Copts, or any thing pertaining to those people, who are the descendants of the ancient Egyptians, and called *Copthi* or *Copts*, as distinct from the Arabians and other inhabitants of modern Egypt.

COP'ULA, the word that connects any two terms in an affirmative or negative proposition; as "God *made* man;" "Religion *is* indispensable to happiness."

COP'ULATIVE PROPOSITIONS, in logic, those where the subject and predicate are so linked together, by copulative conjunctions, that they may be all severally affirmed or denied one of another. "Science *and* literature enlighten the mind, *and* greatly increase our intellectual enjoyments."

COP'Y, in law, signifies the transcript of any original writing, as the copy of a patent, charter, deed, &c. A common deed cannot be proved by a copy or counterpart, where the original may be procured. But if the deed be enrolled, certifying an attested copy is proof of the enrolment, such copy may be given in evidence.——*Copy* is also used for the imitation of an original work, more particularly in paintings, and other works of art.——*Copy*, among printers, denotes the manuscript or original of a book, given to be printed. Also, when we speak of a book, or a set of books, we say a *copy*; as, a copy of the Scriptures; a copy of Sir Walter Scott's works, &c.

COP'YHOLD, a tenure of landed property, by which the tenant holds his land by copy of court roll of the manor at the will of the lord, or rather, according to the custom of the manor by which such estate is discernible.

COP'YRIGHT, the exclusive right of printing and publishing copies of any literary performance, either by an author in his own right, or vested in the hands of those to whom he may have assigned that right.

COQUET'TE, a light, trifling girl, who endeavours to attract admiration by making a display of her amatory arts, from a desire to gratify vanity, rather than to secure a lover. The species is very numerous, and by no means confined to the fair sex. In France, the males are easily designated by the masculine termination, as *coquet*; but in England, we have to use *male* as a prefix to the word, when we speak of one of these silly flutterers.

COR, in anatomy, the heart.——*Cor Caroli*, in astronomy, a constellation in the

northern hemisphere, situated between the *Coma Berenicis* and *Ursa Major*, so called by Dr. Halley in honour of King Charles. ——*Cor Hydræ*, a fixed star of the first magnitude, in the constellation *Hydra*.——*Cor Leonis, or Regulus*, a fixed star of the first magnitude, in the constellation *Leo*.——*Cor Veneris*, the name of a beautiful kind of heart-shells.

CORACOBRACHIA'LIS, in anatomy, a muscle that has its origin at the caracoid process of the scapula, and its termination about the middle part of the arm. Its use is to raise the arm upward and forward.

CORACOHYOIDÆ'US, in anatomy, a muscle which arises from the upper edge of the scapula, and inserted in the *os hyoides*, which it serves to pull obliquely downwards.

COR'ACOID, in anatomy, a small sharp process of the scapula, shaped like a crow's beak.

COR'AL, in zoology, a genus of zoophytæ found in the sea, attached to stones, bones, shells, &c. Coral is red, white, and black; and was formerly believed to be a vegetable substance, but is now ascertained to be composed of a congeries of animals. The islands in the South Seas are principally coral rocks covered with earth, which have been formed by them from the bottom of the ocean. The coral fishery is particularly followed in the Mediterranean, on the coast of France, where the red coral most abounds. The coral is attached to the sub-marine rocks, as a tree is by its roots, but the branches, instead of growing upwards, shoot downwards towards the bottom of the sea; a conformation favourable to breaking them off, and bringing them up. For this kind of fishing, eight men, who are excellent divers, equip a felucca or small boat, called commonly a coralline; carrying with them a large wooden cross, with strong, equal, and long arms, each bearing a stout bag-net. They attach a strong rope to the middle of the cross, and let it down horizontally into the sea, having loaded its centre with a weight sufficient to sink it. The diver follows the cross, pushes one arm of it after another into the hollows of the rocks, so as to entangle the coral in the nets; when his comrades in the boats pull up the cross and its accompaniments.

COR'AL-TREE, or *Erythrina*, a genus of plants, of several species, natives of Africa and America. They are all shrubby flowering plants, adorned chiefly with trifoliate or three-lobed leaves, and scarlet spikes of papilionaceous flowers.

COR'ALLIFORM, forked, crooked, and irregular, like coral.

COR'ALLINE, a submarine plant-like body, consisting of many slender jointed branches, resembling some species of moss. In the Linnæan system, corallines are classed with the zoophytes.——*Coralline* is also a small boat, used in the coral fisheries.

COR'ALLITE, a mineral substance or petrifaction, in the form of coral.

COR'ALLOID, a species of coralline, resembling woven cloth in texture, consisting of arrangements of very small cells.

COR'BEIL, in fortification, a little basket, to be filled with earth, and set upon a parapet, to shelter men from the fire of besiegers.

COR'BEL, in building, a short piece of timber in a wall, jutting six or eight inches, in the manner of a shoulder-piece; sometimes placed for strength under the semi-girder of a platform.

COR'CULUM, or COR'CULE, in botany, the embryo of the seed, or rudiment of a future plant, attached to and involved in the cotyledons.

CORD'AGE, every description of ropes and lines used on shipboard, but more particularly that used in the running rigging of a ship.

CORD'ATE, a term used by naturalists for heart-shaped; thus, in botany, a *cordate leaf* means one which resembles the longitudinal section of the heart; *cordate-lanceolate*, shaped like a heart, but gradually tapering towards each extremity; *cordate-sagittate*, heart-shaped, but resembling the head of an arrow.

CORDELIE'R, in church history, a grey friar or monk of the order of St. Francis. The cordeliers wear a white girdle or rope. tied with three knots, and called the *cord of St. Francis;* but the design of it, they say, is to commemorate the bands wherewith Christ was bound.

CORDELIE'RS. This word, as we have seen above, originally signified an order of Franciscan monks; but it was afterwards given to a society of Jacobins in France from 1792 to 1794, who were so called from their place of meeting. They were distinguished by the violence of their speeches and conduct, and contributed not a little to the execrable crimes which disgraced the French name and nation during the early periods of revolutionary anarchy.

COR'DIA, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are all trees.

COR'DIAL, in medicine, whatever excites the system, raises the spirits, and quickly produces strength and cheerfulness.

COR'DON, in fortification, a row of stones jutting before the rampart, and the basis of the parapet. The word cordon is still more used to denote a line or series of military posts; as, a *cordon* of troops. Cordon also signifies a ribbon, as the *cordon bleu*, the badge of the order of the Holy Ghost.

CORD'OVAN, leather made of goat skin, and named from Cordova in Spain.

CORE'IA, in antiquity, a festival in honour of Proserpine.

COREOP'SIS, in botany, a genus of plants, class 19 *Syngenesia*, order 3 *Polygamia frustanea*. The species are mostly perennials.

CORIA'CEOUS, stiff, like leather: a botanic term for leaves, capsules, &c. when in that state.

CORIAN'DER, the *Coriandrum sativum* of Linnæus, an annual plant, the seed of which when dry is an agreeable aromatic.

CORAL FISHING, LIKE PEARL FISHING, IS ATTENDED WITH MUCH DANGER, IN CONSEQUENCE OF THE SHARKS WHICH INFEST THOSE SEAS.

ON THE EAST OF NEW SOUTH WALES IS A CORAL REEF, SAID TO BE 500 MILES IN LENGTH, AND UPWARDS OF TWO HUNDRED FATHOMS PERPENDICULAR.

BY CLOSING WINE BOTTLES WITH BLADDER INSTEAD OF CORKS, THE WATERY PARTS ONLY ESCAPE, AND THE STRENGTH OF THE WINE IS IMPROVED.

THE PRACTICE OF EMPLOYING CORK TO ASSIST IN SWIMMING IS VERY ANCIENT, AND ITS USE HAS PROVED OF GREAT VALUE IN CASES OF SHIPWRECK.

It is occasionally employed as a sudorific, and as a corrective of certain purgatives.

CORIA'RIA, in botany, a genus of plants, class 22 *Dioecia*, order 10 *Decandria*. The species are shrubs, as *Coriaria myrtifolia*, myrtle-leaved sumach, &c.

CORIN'THIAN, pertaining to Corinth, a celebrated city of Greece. The *Corinthian Order*, in architecture, is the noblest and richest of the five orders. Its capital is adorned with two rows of leaves, between which arise little stalks or caulicoles, forming sixteen volutes.

CO'RIUM, in anatomy, any thing which serves as an integument or covering; as the skin or hide of an animal, the shell of an egg, &c.

CORK, the bark of the cork-tree, a species of *quercus*, or *oak*, growing, in great abundance, in Spain, Italy, and France. The bark is taken from the tree by making an incision down the whole height of the trunk, and, at each extremity, another round the girth. The tree is supplied with this coat in a degree so peculiarly abundant, that it not only continues to flourish uninjured by the act of barking, but, in its natural state, regularly sheds the whole, and acquires a new covering. Cork is light, porous, nearly impervious to most liquors, and wonderfully elastic; qualities which render it superior to all other substances for stoppers for bottles, in the manufacture of which it is principally made use of. It is also employed as buoys to float nets, in the construction of life-boats, the making of water-proof shoes, and in various other ways. There are two sorts of cork, the white and the black; the former grows in France, and the latter in Spain. The cakes of the white are usually more beautiful, more smooth, lighter, and of a finer grain than the black; and when this kind is burned in close vessels it forms the pigment called *Spanish black*. The uses of cork were well known to the ancients, and were nearly the same to which it is applied by us.

COR'MORANT, or COR'VORANT, an exceedingly voracious bird of the pelican tribe. It builds on the highest cliffs hanging over the sea, and feeds on fish.

CORN, farinaceous seed, as that of wheat, rye, barley, oats, and maize. In short, it comprehends all the kinds of grain which constitute the food of men and horses. We also use the word for grain growing in the fields, the plants or stalks, being included in the word corn, until separated from the ears.——Corn, in surgery, an excrescence or hard tubercle like a flat wart, growing in the feet, especially upon the joints of the toes. Corns are justly attributed to the pressure of tight or narrow-toed shoes, especially if a person is obliged to stand or walk much.

CORN'EA, in anatomy, the transparent membrane in the fore-part of the eye, through which the rays of light pass.

COR'NEL-TREE, or CORNE'LIAN-TREE, the dog-wood, or cornelian cherry-tree, a genus of plants of several species. The *mascula*, or cornelian cherry-tree, has a stem twenty feet high, and produces a small, red, acid fruit.

COR'NET, an instrument very similar to a trumpet, which is used in the army.——Also a commissioned officer in a troop of cavalry. He bears the colours, and commands in the absence of the lieutenant. His rank or commission is called a *cornetcy*.

CORN'FLAG, in botany, the *Gladiolus*, a genus of plants, having a double tuberose root, with leaves like the fleur-de-lis, and a flower consisting of one petal, shaped like the lily.

COR'NICE, in architecture, the uppermost member of the entablature of a column; or any moulded projection that crowns or finishes the part to which it is affixed, as the cornice of a room, a door, &c.

CORNIC'ULATE, in botany, bearing a little spur or horn.

CORNUCO'PIA, or the Horn of Plenty, a source whence, according to the ancient poets, every production of the earth was lavished; a gift from Jupiter to his nurse, the goat Amalthea. In elucidation of this fable, it has been said that in Lybia, the ancient name of a part of Africa, there was a little territory, in shape not ill resembling a bullock's horn, which Ammon, the king, gave to his daughter Amalthea, the nurse of Jupiter. Upon medals the cornucopia is given to all deities, genii, and heroes, to mark the felicity and abundance of all the wealth procured by the goodness of the former, or the care and valour of the latter.

CORNUCO'PIÆ, in botany, a genus of plants, class 3 *Triandria*, order 2 *Digynia*. It is so called from the resemblance of the flowers in the involucre to a horn of plenty.

COR'NUS, in botany, a genus of plants, class 4 *Tetandria*, order 2 *Digynia*. The species are trees or shrubs, as *cornus mascula*, the cornelian cherry, *cornus florida*, and many others.

COR'NU AMMO'NIS, a shell, in shape resembling a ram's horn.

COROL'LA or COR'OL, in botany, the leafy parts of a flower, which is marked with divers colours, and which surrounds the parts of fructification. Each leaf or division of the corolla is called a petal; and according as there is one, two, or three of these petals, the corolla is said to be monopetalous, dipetalous, tripetalous, &c.

COR'OLLARY, a conclusion or consequences drawn from premises, or from what is advanced or demonstrated.

COR'OLLULE, or COR'OLLET, a term used by botanists for one of the little partial flowers, which together make up the compound ones; the floret is an aggregate flower.

CORO'NA, in architecture, a large flat member of a cornice, crowning the entablature and the whole order.——In anatomy, the upper surface of the molar teeth or grinders.——In optics, a halo or luminous circle round the sun or moon.——In botany, the circumference or margin of a radiated compound flower.

CORONA'LIS SUTU'RA, in anatomy,

the coronal suture, or first suture of the skull, which reaches transversely from one temple to the other, and joins the *os frontis* with the *ossa parietalia*.

CORONARY VESSELS, certain vessels which furnish the substance of the heart with blood.——*Coronary arteries*, two arteries springing out of the *aorta*, before it leaves the *pericardium*.——*Coronary vein*, a vein diffused over the exterior surface of the heart. It is formed of several branches arising from all parts of the *viscus*, and terminates in the *vena cava*, whither it conveys the remains of the blood brought by the coronary arteries.

CORONA'RIÆ, the tenth Linnæan natural order of plants, containing hyacinths, lilies, and other herbaceous and perennial plants.

CORONA'TION, the public and solemn ceremony of crowning, or investing a prince with the insignia of royalty, in acknowledgment of his right to govern the kingdom; at which time the prince swears reciprocally to the people, to observe the laws, customs, and privileges of the kingdom, and to act and do all things conformable thereto. The form of the coronation oath of a British monarch is as follows: "I solemnly promise and swear to govern the people of this United Kingdom of Great Britain and Ireland, and the dominions thereto belonging, according to the statutes in parliament agreed on, and the laws and customs of the same; to the utmost of my power to maintain the laws of God, the true profession of the gospel, and the Protestant reformed religion established by the law; to preserve unto the bishops and the clergy of this realm, and the churches committed to their charge, all such rights and privileges as by law do or shall appertain unto them or any of them." After this, the king or queen, laying his or her hand upon the holy Gospels, shall say, "The things which I have before promised, I will perform and keep; so help me God."

COR'ONER, the presiding officer in a jury convened to inquire into the cause of sudden deaths.

COR'ONET, in heraldry, a small crown worn by the nobility. The coronet of a duke is adorned with strawberry leaves; that of a marquis has leaves with pearls interspersed; that of an earl has the pearls raised on the tops of the leaves; that of a viscount is surrounded with pearls only; that of a baron has only four pearls.

COR'ONET, or COR'NET, in farriery, the upper part of a horse's hoof.

COR'PORAL, the lowest military officer in a company of foot, who has charge over one of the divisions, places and replaces sentinels, &c.——*Corporal*, in law, an epithet for any thing that belongs to the body, as *corporal punishment*. Also, a *corporal oath*, so called because the party taking it is obliged to lay his hand on the Bible.

CORPORA'TION, a body politic or corporate, so called because the persons or members are joined into one body, and authorized by law to transact business as an individual. Corporations are either spiritual or temporal: *spiritual*, as bishops, deans, archdeacons, &c., *temporal*, as the mayor, and aldermen of cities. And some are of a mixed nature, being composed of spiritual and temporal persons; such as heads of colleges and hospitals, &c. Corporations may be established either by prescription, letters patent, or act of parliament; but they are most commonly established by patent or charter. It has been truly said, that the whole political system is made up of a concatenation of various corporations, political, civil, religious, social, and economical. A nation itself is the great corporation, comprehending all the others, the powers of which are exerted in legislative, executive, and judicial acts.

CORPS, (French, pron. *kore)* a body of troops; any division of an army; as, a *corps de reserve*, the troops in reserve; *corps de bataille*, the whole line of battle, &c.

COR'PUS, in anatomy, a name given to several substances, or parts in the human body.

COR'PUSCULE, a minute particle or physical atom. Corpuscules are not the elementary principles of matter, but such small particles, simple or compound, as are not dissolved or dissipated by ordinary heat.

CORPUS CHRISTI DAY, a festival appointed by the church of Rome in honour of the sacrament of the Lord's Supper.

CORPUS'CULAR PHILOS'OPHY, that method of philosophising which endeavours to explain things, and to account for the phenomena of nature, by the motion, figure, rest, position, &c. of the minute particles of matter.

CORREL'ATIVE, an epithet denoting the having a reciprocal relation, so that the existence of one in a certain state depends on the existence of another; as, father and son; light and darkness; motion and rest; all of which are correlative terms.

COR'RIDOR, in architecture, a gallery or long aisle round a building, leading to several chambers at a distance from each other.——In fortification, the covered way lying round the whole compass of the fortifications of a place.

CORROB'ORANT, of a strengthening nature; as, a *corroborant* medicine.

CORRO'SION, the action of eating or wearing away by slow degrees, as by the action of acids or metals.

CORRO'SIVE SUBLIMATE, oxymuriate of mercury; an extremely acrid and poisonous preparation.

COR'RUGATOR, a muscle which contracts the skin of the forehead into wrinkles.

COR'SAIR, a pirate or cruiser; a name commonly given to the piratical cruising-vessels of Barbary, which, from the beginning of the sixteenth century to a recent period, infested the Mediterranean.

CORS'ELET, in natural history, that part of winged insects which answers to the breast in other animals.——Also, a small cuirass.

COR'SET, an article of dress, especially intended to preserve the beauties of the

ROYAL CORONATIONS HAVE BEEN PERFORMED IN WESTMINSTER ABBEY, EVEN TO THE LATEST TIMES, WITH GREAT SPLENDOUR AND FEUDAL CEREMONIES.

CORPORATIONS MAY BE USED FOR THE BEST OR MOST PERNICIOUS PURPOSES, FOR REARING INSTITUTIONS OR FOR DESTROYING THEM.

female form. To display the general contour of the figure, without impeding the gracefulness of its motions; and to guard it from slight inelegancies, resulting from improper position, or the character of exterior drapery, are the legitimate objects of the corset. But it often happens that females, naturally endowed with fine forms, wear corsets which are only fit for those who are disproportionately shaped, and destroy the graceful ease of their movements, by encasing themselves in barriers of steel and whalebone. Ladies of a certain age, who, from luxurious living or indolent habits, have grown corpulent, may be permitted to adopt any mode of dress they please; their experience ought to be sufficient to direct them; but for young persons, in whom the organs of the body are in a state of development, the corset should be of the simplest character, so that the lungs should have their full play, and no undue compression of the muscles be allowed to take place, whatever the capricious dictates of fashion may urge to the contrary.

CORTE'GE, a French word, signifying the train or retinue that accompanies a person of distinction.

CORT'ES, the assembly of the states of Spain and Portugal; answering, in some measure, to the parliament of Great Britain.

COR'TEX, the outer bark of a plant.

CORTICAL, consisting of bark or rind; belonging to the external covering, as the *cortical* part of the brain.

CORUN'DUM, a mineral of the sapphire kind, which is found in the East Indies.

CORUSCA'TION, a sudden flash of light in the atmosphere; or the light produced by the combustion of inflammable gas in the earth.——*Artificial coruscations* may be produced by phosphorus and sulphuric acid, or by sulphuric acid and iron filings.

CORVET'TE, a French word for any vessel of war carrying less than twenty guns.

CORVI'NUS LA'PIS, in mineralogy, a stone, found in India, remarkable for its making a noise like thunder when heated.

COR'VUS, the RAVEN or CROW kind, in ornithology, a genus of birds, of the order of *picæ*.——In astronomy a constellation of the southern hemisphere.——*Corvus*, in antiquity, a military engine invented by the Romans at the time of their wars in Sicily, when they first engaged the Carthaginian fleet. It consisted of a strong platform of boards at the prow, moveable as on a spindle, and thrown over the side of an enemy's vessel when grappled.

CORYBAN'TES, in antiquity, priests of the goddess Cybele, celebrated for their wild and extravagant attitudes in dancing, &c.

CORYDA'LES, the twenty-fourth Linnæan natural order of plants, with helmet-shaped flowers.

COR'YMB, in botany, a species of inflorescence, in which the lesser flower stalks are produced along the common stalk on both sides, rising to the same height, so as to form an even surface.

CORYM'BIATED, in botany, garnished with corymbs.

CORYMBIF'EROUS, bearing fruit or berries in clusters, or producing flowers in clusters.

CORYPHÆ'US, a leader of a chorus.

COR'YPHENE, in ichthyology, a fish with a sloping truncated head, and dorsal fin extending the whole length of the back.

COSCIN'OMANCY, the ancient art of divination by means of a sieve. The sieve was suspended, and if it trembled or turned when the name of a suspected person was mentioned, the party was deemed guilty.

CO-SE'CANT, in geometry, the secant to an arc which is the complement of another to ninety degrees.

CO'-SINE, in geometry, the sine of an arc which is the complement of another to ninety degrees.

COSMET'IC, any preparation that renders the skin soft and white, or helps to beautify and improve the complexion.

COS'MICAL, relating to the whole system of visible bodies, including the earth and stars.

COSMOG'ONY, in physics, the science or theory of the formation of the world.

COSMOG'RAPHY, a description of the world or universe; or the science of describing the several parts of the visible world.

COS'MOLABE, an ancient instrument, very similar to the astrolabe, for measuring distances in the heavens or on earth.

COSMOL'OGY, a treatise relating to the structure and parts of creation, the elements of bodies, the laws of motion, and the order and course of nature.

COSMOP'OLITE, a citizen of the world; one who makes himself at home everywhere.

COS'SACKS, the tribes who inhabit the southern and eastern parts of Russia, Poland, the Ukraine, &c., paying no taxes, but performing, instead, the duty of soldiers. They form a kind of military democracy; and have proved highly serviceable, as irregular cavalry, in the Russian campaigns. Their principal weapon is a lance from ten to twelve feet in length; they have also a sabre, a gun, and a pair of pistols, as well as a bow and arrows. The lances, in riding, are carried upright by means of a strap fastened to the foot, the arm, or pommel of the saddle. Those who use bows carry a quiver over the shoulder. Though little adapted for regular movements, they are very serviceable in attacking baggage, magazines, and in the pursuit of troops scattered in flight. They fight principally in small bodies, with which they attack the enemy on all sides, but mostly on the flanks and in the rear, rushing upon them at full speed, with a dreadful hurrah, and with leveled lances.

COS'TUME, in painting and the fine arts generally, the observance of that rule or precept by which an artist is enjoined to make any person or thing sustain its proper character; the scene, dress, arms, manners, &c. all corresponding.

CO-TAN'GENT, in geometry, the tan-

gent of an arc which is the complement of another to ninety degrees.

COTERIE', a fashionable association; or a knot of persons forming a particular circle. The origin of the term was purely commercial, signifying an association in which each member furnished his part, and bore his share in the profit and loss.

COTHURNUS, in antiquity, a kind of high shoes, laced high, such as Diana and her nymphs are represented as wearing. The tragic actors also wore them, in order to give additional height to those who personated heroes; the *cothurnus* used for this purpose differing from the one used in hunting by its having a sole of cork, at least four fingers thick.

COTTON, a soft downy substance, resembling fine wool, growing in the capsules or pods of a shrub, called the cotton-plant; and is the material of which an immense quantity of cloth is made. The COTTON-PLANT OR SHRUB belongs to the genus *Gossypium*, of several species, all growing in warm climates. In the southern states of America, the cotton cultivated is distinguished into three kinds; the *nankeen cotton*, so called from its colour; the *green seed cotton*, producing white cotton with green seeds; and the *black seed cotton*. The latter produces cotton of a fine, white, silky appearance, very strong, and of a long staple. It appears that the manufacture of cotton has been carried on in Hindostan from the remotest antiquity; and there it is still continued, by hand labour, in all its primitive simplicity. In England, however, during the last half century, it has become of immense importance; and as we cannot allow it to pass unnoticed, we take the liberty of quoting from Mr. McCulloch's excellent Dictionary of Commerce the following appropriate remarks:—"The rapid growth and prodigious magnitude of the cotton manufacture of Great Britain, are, beyond all question, the most extraordinary phenomena in the history of industry. Our command of the finest wool naturally attracted our attention to the woollen manufacture, and paved the way for that superiority in it to which we have long since attained: but when we undertook the cotton manufacture, we had comparatively few facilities for its prosecution, and had to struggle with the greatest difficulties. The raw material was produced at an immense distance from our shores; and in Hindostan and China the inhabitants had arrived at such perfection in the arts of spinning and weaving, that the lightness and the delicacy of their finest cloths emulated the web of the gossamer, and seemed to set it at defiance. Such, however, has been the influence of the stupendous discoveries and inventions of Hargraves, Arkwright, Crompton, Cartwright, and others, that we have overcome all these difficulties—that neither the extreme cheapness of labour in Hindostan, nor the excellence to which the natives had attained, has enabled them to withstand the competition of those who buy their cotton; and who, after carrying it 5000 miles to be manufactured, carry back the goods to them. This is the greatest triumph of mechanical genius: and what perhaps is most extraordinary, our superiority is not the late result of a long series of successive discoveries and inventions; on the contrary, it has been accomplished in a very few years. Little more than half a century has elapsed since the British cotton manufacture was in its infancy; and it *now* forms the principal business carried on in this country, affording an advantageous field for the accumulation and employment of millions upon millions of capital, and thousands upon thousands of workmen! The skill and genius by which these astonishing results have been achieved, have been one of the main sources of our power: they have contributed in no common degree to raise the British nation to the high and conspicuous place she now occupies. Nor is it too much to say, that it was the wealth and energy derived from the cotton manufacture that bore us triumphantly through the late dreadful contest, at the same time that it gives us strength to sustain burdens that could not be supported by any other people."——The following progress of a pound of cotton may not be uninteresting to our readers. It appeared originally in the Monthly Magazine. "There was sent to London lately, from Paisley, a small piece of muslin, about one pound weight, the history of which is as follows:—The wool came from the East Indies to London; from London it went to Lancashire, where it was manufactured into yarn; from Manchester it was sent to Paisley, where it was woven; it was sent to Ayrshire next, where it was tamboured; it was then conveyed to Dumbarton, where it was hand-sewed, and again returned to Paisley, whence it was sent to Glasgow and finished, and then sent up per coach to London. It may be reckoned about three years that it took to bring this article to market, from the time when it was packed in India, till it arrived complete in the merchant's warehouse in London; whither it must have been conveyed 5000 miles by sea, nearly 1000 by land, and contributed to reward the labour of nearly 150 persons, whose services were necessary in the carriage and manufacture of this small quantity of cotton, and by which the value has been advanced more than 2000 per cent."——*Cotton-mill*, a mill or building, with machinery for carding, roving, and spinning cotton, either by means of water or steam.——*Cotton-gin*, a machine to separate the seeds from cotton.

COTTON-GRASS, the Eriophorum, a perennial of the grass tribe; so called because its seeds have a downy substance attached to them which resembles cotton.

COTTON-THISTLE, an herbaceous plant, with a biennial root; so called because it has downy leaves.

COTYLA, in anatomy, any deep cavity in a bone, in which another bone is articulated; but it is generally used to express the *ace-*

THE COTTON MANUFACTURING DISTRICT OF LANCASHIRE INCLUDES MANCHESTER, OLDHAM, ROCHDALE, STOCKPORT, BURY, &c., WITH A POPULATION OF 500,000.

THE PRIVY COUNCIL CONTINUES FOR SIX MONTHS AFTER THE ACCESSION OF A NEW KING, UNLESS HE PREVIOUSLY DISSOLVE IT.

THE LORD PRESIDENT OF THE PRIVY COUNCIL IS APPOINTED BY LETTERS PATENT UNDER THE GREAT SEAL, DURING PLEASURE.

tabulum, or cavity which receives the head of the thigh-bone.

COTYL'EDON, in botany, the perishable lobe or placenta of the seeds of plants, of which there are mostly two. They are destined to nourish the embryo plant, and then perish.

COUCH, in painting, a term used for each lay or impression of colour, either in oil or water, covering the canvas, wall, or other matter to be painted. Gilders use the term *couch*, for gold or silver leaf laid on metals in gilding or silvering.

COUCH'ANT, in heraldry, lying down, but with the head raised; which distinguishes the posture of *couchant* from *dormant*, or asleep.——*Levant* and *couchant*, in law, rising up and lying down, applied to beasts; and indicating that they have been at least one night on the land.

COUCH-GRASS, a weed, which spreads very fast in arable land, and chokes every thing else.

COUCH'ING, one of the modes of operating in cases of cataract, by which the opaque lens is removed out of the axis of vision.

COUGH, a convulsive motion of the diaphragm, muscles of the larynx, thorax, &c.; expelling the air that was drawn into the lungs by inspiration, and carrying along with it the phlegm or irritating matter which causes the convulsive effort of the muscles. This disease is generally considered unimportant, particularly if there be no fever connnected with it; but every cough of a fortnight's duration is suspicious, and ought to be medically treated.

COUN'CIL, in national affairs, an assembly of persons for the purpose of concerting measures of state. In England, that is called the *Privy Council*, wherein the sovereign and privy counsellors meet in the palace to deliberate on affairs of state. When the council is composed only of cabinet ministers, it is called a *Cabinet Council*.——*Council of war*, an assembly of the principal officers of a fleet or army, called by the admiral or general to concert measures for requisite operations.

COUN'SEL, in law, any counsellor or advocate, or any number of counsellors, barristers, or serjeants; as, the plaintiff's or defendant's *counsel*.

COUNT, a title of foreign nobility, equivalent to an English earl.——In law, a particular charge in an indictment, or narration in pleading, setting forth the cause of complaint. There may be different *counts* in the same declaration.

COUN'TENANCE, the whole form of the face, or system of features. This word has many figurative applications: thus, by the *light of God's countenance*, we mean grace and favour: so the *rebuke of his countenance* indicates his anger.——To *keep the countenance*, is to preserve a calm, natural, and composed look.——To *keep in countenance*, to give assurance to one, or protect him from shame.——To *put out of countenance*, to intimidate and disconcert.

COUN'TER, a term which enters into the composition of many words of our language, and generally implies opposition.

COUN'TER-APPROACH'ES, in fortification, lines and trenches made by the besieged in order to attack the works of the besiegers, or to hinder their approaches.

COUN'TER-DEED, a secret writing either before a notary or under a private seal, which destroys, invalidates, or alters a public one.

COUN'TERDRAWING, in painting, copying a design or painting by means of lines drawn on oiled paper, or other transparent substance.

COUN'TERFEIT, that which is made in imitation of something, but without lawful authority, and with a view to defraud by passing the false for the true. Thus we say, *counterfeit* coin, a *counterfeit* bond, deed, &c.

COUN'TERGUARD, in fortification, a small rampart or work raised before the point of a bastion, consisting of two long faces parallel to the faces of the bastion, making a salient angle, to preserve the bastion.

COUN'TERMARK, a mark put upon goods that have been marked before. It is also used for the several marks put upon goods belonging to several persons, to show that they must not be opened but in the presence of all the owners or their agents.——The mark of the goldsmith's company, to show the metal to be standard, added to that of the artificer.

COUN'TERMINE, in military affairs, a well and gallery sunk in the earth and running underground, to meet and defeat the effect of the enemy's mine; or, in other words, a mine made by the besieged, in order to blow up the mine of the besiegers.

COUN'TERPALED, in heraldry, is when the escutcheon is divided into twelve pales parted *perfesse*, the two colours being counterchanged; so that the upper and lower are of different colours.

COUN'TERPART, the correspondent part or duplicate. Also, the part which fits another, as the key of a cipher.——In music, the part to be applied to another; as, the base is the counterpart to the treble.

COUNTERPAS'SANT, in heraldry, is when two lions in a coat of arms are represented as going contrary ways.

COUN'TERPOINT, in music, the art of combining and modulating consonant sounds; or of disposing several parts in such a manner as to make an agreeable whole of a concert.

COUN'TERPROOF, an engraving taken off from another fresh printed, which by being passed through the rolling press gives an inverted figure of the former.

COUNTER-REVOLUTION, a revolution opposed to a former one, and restoring a former state of things.

COUN'TERSCARP, in fortification, that side of the ditch which is next the camp, and faces the body of the place; but it often signifies the whole covered way, with its parapet and glacis.

COUNTER-SECU'RITY, security given

to one who has entered into a bond or become surety for another.

COUNTERSIGN, a military watch-word; or a private signal given to soldiers on guard, with orders to let no man pass unless he first names that sign.——Also, to sign, as secretary or other subordinate officer, any writing signed by a principal or superior, to attest the authenticity of his signature.

COUNTER-TEN'OR, in music, one of the middle parts, between the treble and the tenor.

COUNT'ING-HOUSE, the house or room appropriated by merchants, traders, and manufacturers, to the business of keeping their books, &c.

COUN'TRY, any tract of inhabited land or any region as distinguished from other regions; any state or territory; and also any district in the vicinity of a city or town. Thus we say, This gentleman has a seat in the *country;* England is my native *country;* the countries of Europe, Asia, &c.

COUN'TY, originally, the district or territory of a count or earl: one of the ancient divisions of England, which by the Saxons were called *shires.* England is divided into forty counties or shires, Wales into twelve, Scotland into thirty. Each county has its sheriff and its court, with other officers employed in the administration of justice and the execution of the laws; and each lord-lieutenant of a county has the command of its militia.——*County-corporate,* a title given to several cities or ancient boroughs (as Southampton and Bristol), on which certain kings of England have thought proper to bestow peculiar privileges; annexing territory, land, or jurisdiction, and making them counties within themselves, with their own sheriffs and other officers.——*County Palatine,* a county distinguished by particular privileges, and named from *palatio,* the palace, because the owner had originally royal powers in the administration of justice; these are now, however, greatly abridged. The counties palatine in England are Lancaster, Chester, and Durham.

COUP, a French term for a stroke or sudden blow.——*Coup de Grace,* the finishing blow.——*Coup de Main,* a sudden unpremeditated attack.——*Coup d'Œil,* the first glance of the eye, with which it surveys any object at large.——*Coup de Soleil,* any disorder suddenly produced by the violent scorching of the sun.

COUP'ED, or COUPE', in heraldry, is used to express the head, or any limb, of an animal, cut off from the trunk smooth; distinguishing it from that which is called *erased,* or forcibly torn off.——*Couped* is also used to signify such crosses, bends, bars, chevrons, &c. as do not touch the sides of the escutcheon, but are, as it were, cut off from them.

COUPEE', a motion in dancing, when one leg is a little bent and suspended from the ground, and with the other a motion is made forward.

COUP'LE, two of the same species or kind; as, a couple of men, a couple of apples, &c. A *pair* is a *couple,* and a *brace* is a *couple;* but a couple may or may not be a pair or a brace.

COUP'LE-CLOSE, in heraldry, an ordinary, so termed from its enclosing the chevron by couples, being always borne in pairs, one on each side a chevron.

COUP'LET, the division of a hymn, ode, or song, wherein an equal number or an equal measure of verses is found in each part, called a *strophe.*

COUR'AGE, firmness of mind, inspired by a sense of what is just and honourable; that which, amidst all the dangers and trials to which human life is incident, enables a man steadily to pursue the dictates of conscience and prudence. It includes valour, boldness, and resolution; and is a constituent part of fortitude.

COURANT', in heraldry, an epithet for any beast represented in a running attitude.

COURAN'TO, a piece of music in triple time; also, a kind of dance.

COURSE, in its general sense, a motion forward, either in a direct or curving line; and may be applied to animals, and to solid or fluid bodies.——*Course,* in navigation, that point of the compass on which a ship steers.——*Course,* in masonry, a continued range of bricks or stones of the same height.——Applied to the arts and sciences, *course* denotes a methodical series; as, the author has completed his course of lectures; or the medical student has completed his course in anatomy.——*Of course,* in natural and regular order; as, this effect will follow *of course.*——In a ship, the principal sails are called *courses.*——The *Course of Exchange,* in commerce, the current price or rate at which the coin of one country is exchanged for that of another; which, as it depends upon the balance of trade and the political relations which subsist between the two countries, is always fluctuating.

COURSING, the act or sport of pursuing any beast of chase, as the hare, &c. with greyhounds.

COURT, a palace; a place where justice is administered; also the persons or judges assembled for hearing and deciding causes, civil, criminal, &c. Thus we have a *court* of law; a *court* of equity; a *court* martial; an ecclesiastical *court,* &c.

COURT-BARON, a court incident to manorial rights.

COURT-LEET', a court of record held once a year, in a particular hundred, lordship, or manor, before the steward of the leet.

COURT-MARTIAL, a court consisting of military or naval officers, for the trial of offences within its jurisdiction.

COURT'-ROLL, a roll containing an account of the number, &c. of lands which depend on the jurisdiction of the manor, &c.

COURTESY, elegance or politeness of manners, combined with kindness.——A respectful inclination of the body, performed by a woman, corresponding in design to the

bow of a gentleman.——*Tenure by courtesy*, in law, is where a man marries a woman seized of an estate of inheritance, and has by her issue born alive, which was capable of inheriting her estate: in this case, on the death of his wife, he holds the lands for his life, as tenant by courtesy.

COUSIN, the son or daughter of an uncle or aunt; the children of brothers and sisters being usually denominated *cousins*, or *cousin-germans*. In the second generation they are called *second cousins*.

COV'ENANT, in law, a writing containing the terms of agreement or contract between parties; or the clause of agreement in a deed containing the covenant. ——In theology, the promise of God to man, that man's perfect obedience should entitle him to happiness. The covenant of grace, is that by which God engages to bestow salvation on man, upon the condition that man shall believe in Christ, and yield obedience to the terms of the Gospel.

COW'-POX, the vaccine disease; a pustule transferred from the udder of a cow to the human body, where it exhausts or neutralizes some morbid action of the *rete mucosum*, which prevents a disease of the same membrane, called *variola*, or small-pox.——The following paragraph having appeared in the public papers at the moment we were going to press with this sheet, we are glad to give it insertion. Much has been before written on the subject; but nothing that we have seen appears so conclusive and satisfactory: "Mr. Ceely, surgeon, of Aylesbury, has demonstrated the important fact, that small-pox and cow-pox have the same origin, the latter being small pox communicated to the cow. Mr. C. inoculated cows with small-pox matter; the vesicle produced in the animal had every appearance of the vaccine pock. To ascertain the point, children were inoculated with matter taken from the cow thus artificially infected; the result was, a fine, genuine vaccine vesicle. To establish the fact satisfactorily, these children were submitted to small-pox inoculation, and found to be protected from the disease. Twenty-five successive inoculations have now been performed with this new virus, which may truly be named *variola vaccina*, and it continues to produce the most satisfactory vesicles; the matter has been employed in Bristol with perfect success."

COW'RY, shell-money. The *cyprea moneta* is used for this purpose; and of which 100 in the East Indies pass for a penny.

CRAB, or CANCER, a genus of crustaceous fish, of which there are numerous species, having in general eight legs, besides two large claws. The habits of crabs are various; some are exclusively aquatic, and remain on the sands or rocks, at great depths in the sea; others inhabit excavations formed in the soft coral reefs or bars on certain coasts; some spend their days altogether on shore, living in burrows or dens; others live on rocky beaches, basking in the sun, and only retiring into the sea when alarmed; while some species are completely terrestrial, inhabiting holes upon the highest hills and mountains of the West Indies. The most remarkable are the violet crabs of the Bahamas, which live in the mountains, but once a year proceed to the sea in a body of many millions, a journey which employs them some weeks. Here they cast their spawn, and soon after millions of young crabs travel into the mountains. The crabs which abound on our coasts, are the *locusta* and *mænas* species.

CRAB'S CLAWS, in the materia medica, are the tips of the claws of the common crab broken off at the verge of the black part. They are used as an alkaline absorbent, and form the base of many of the compound sudorific powders.

CRAB'S EYES, concretions in the head of the cray-fish. They are accounted not only absorbent and drying, but also discussive and diuretic.

CRAMP, a convulsive contraction of a muscular part of the body, with pain.

CRAN'BERRY, in botany, a species of *vaccinium*, growing only on peat bogs or swampy land, and bearing small bright red berries, which have a pleasant acid flavour, and are much used in tarts.

CRANE, a migratory fowl of the genus *Ardea*. The common crane, or *ardea grus*, has black wing-feathers, with an ash-coloured body, and flies in great flocks in many countries. There are a great many species, but the characteristics of all consist in a straight long bill, with a furrow from the nostrils towards the point, long legs, and a long neck. The Siberian crane is noted for its sagacity, and the flocks keep a sentinel to warn them of danger. ——*Crane*, a machine for raising great weights, consisting of a horizontal arm, or piece of timber, projecting from a post, and furnished with a pulley. They are also made of cast iron, on the principle of the wheel and pinion; by which they are rendered very commodious, and capable of raising immense weights.

CRA'NE-LINES, in a ship, are lines going from the upper end of the sprit-sail top-mast, to the middle of the fore-stays. They serve to keep the sprit-sail-top-mast upright and steady in its place, and to strengthen it.

CRA'NE'S-BILL, in botany, the plant *Geranium*, of many species; so named from an appendage of the seed-vessel, which resembles the beak of a crane.

CRA'NE-FLY, an insect of the genus *Tipula*, of many species.

CRANIOL'OGY, the science which investigates the structure and uses of the skulls in various animals, particularly in relation to their specific character and intellectual powers. One who is versed in this science is termed a *Craniologist*.

CRANIOM'ETER, an instrument for measuring the skulls of animals. The art of measuring them for the purpose of discovering their specific differences, is called *Craniometry*.

CRANIOS'COPY, the science of discovering, by the eminences produced by the brain on the cranium, the particular parts in which reside the organs that influence certain passions or faculties.

CRA'NIUM, the skull; the assemblage of bones which enclose the brain.

CRANK, an iron axis with the end bent like an elbow, for moving a piston, &c., and causing it to rise and fall at every turn. Also a piece of brass work of a similar shape, on which the bell wire is fixed, so as to move the bell.——A ship is said to be *crank-sided* when she can bear but little sail, for fear of over-setting; and when a ship cannot be brought on the ground without danger, she is said to be *crank* by the ground.

CRAPE, a light transparent stuff, resembling gauze. It is made of raw silk, gummed and twisted on the mill, and much used in mourning.

CRA'SIS, the healthy constitution of the blood in an animal body.

CRASPEDA'RIA, in zoology, a genus of animalcules, without any tail or limbs, but with an apparent mouth, and a series of *fimbriæ* round it in the manner of a fringe. Some species are roundish, others oval, and others cylindrical.

CRASSAMEN'TUM, in physic, the thick red, or fibrous part of the blood, as distinct from the serum or aqueous part.

CRATCH'ES, in farriery, a swelling on the pastern, under the fetlock, and sometimes under the hoof of a horse.

CRATE, a large case made of open bars, in which earthenware is packed.

CRA'TER, the aperture or mouth of a volcano, from which the fire issues.——In antiquity, a very large wine-cup or goblet, out of which the ancients poured their libations at feasts.

CRAY'FISH, or CRAW'FISH, a small sort of lobster, found in fresh-water streams. There is also a large kind peculiar to salt water.

CRAY'ON, a general name for all coloured mineral substances, used in designing or painting in pastil; whether they have been beaten and reduced to a paste, or are used in their primitive consistence, after sawing or cutting them into long narrow slips.

CREAM, the oily part of milk, which rises to the surface and forms a scum. By a species of agitation, called churning, it forms butter.——*Cream of lime*, that part of lime which, after being dissolved in its caustic state, separates from the water in the mild state of chalk or limestone.——*Cream of tartar*, the common white tartar freed from its impurities: the crystalized supertartrate of potash.

CRE'ANCE, in falconry, a fine small line, fastened to a hawk's leash when she is first lured.

CREATION, the act of causing to exist, or of shaping and organizing matter so as to form new beings; as the *creation* of man and other animals, of plants, minerals, &c.——Also, the act of investing with a new character; as, the *creation* of peers by the sovereign.

CREDEN'DA, in theology, things to be believed; articles of faith; distinguished from *agenda*, or practical duties.

CREDEN'TIALS, that which gives a title or claim to confidence; as the letters of commendation and power given to an ambassador, or public minister, by the prince that sends him to a foreign court.

CRED'IT, a reliance or resting of the mind on the truth of something said or done.——In a commercial sense, the transfer of goods on trust in confidence of future payment. The seller believes in the solvency and probity of the purchaser, and delivers his goods to him in confidence of it; or he delivers them on the credit or reputation of his customer. It has been said, and, we believe, with much truth, that credit with shopkeepers has become so universal, that seven-tenths of the community are in the constant practice of anticipating their incomes: and there is hardly one so bankrupt in character and fortune as to be unable to find grocers, bakers, butchers, tailors, &c., ready to furnish him upon credit with supplies of the articles in which they respectively deal. This facility of obtaining credit is productive of very pernicious results. The system tempts very many, and sometimes even the most considerate individuals, to indulge in expenses beyond their means; and thus becomes the most fruitful source of bankruptcy, insolvency, and bad faith. To guarantee themselves from the extraordinary risk to which such proceedings expose them, tradesmen are obliged to advance the price of their goods to a most exorbitant height; so that those who are able and who really mean to pay the debts they contract, are, in fact, obliged to pay those of the hosts of insolvents and swindlers maintained by the present system.——*Credit*, in book-keeping, the side of an account in which payment is entered: opposed to *debit*; thus we say, the *credit* or *debit* side; or put that sum to his *credit*.——The confidence which men entertain in the ability and disposition of a nation, to make good its engagements with its creditors, is called *public credit*.——*Letters of credit*, letters given by merchants to persons whom they can trust to draw money from their correspondents.

CREED, a summary of belief, (from *credo*, I believe); the principal articles of the Christian faith; as the Apostles' Creed, the Athanasian Creed, &c.

CREEK, that part of a haven or small channel running from the sea, where goods are landed.

CRE'NATE, in botany, an epithet for leaves, the edges of which are furnished with continuous indentings, neither inclining towards the point nor base.——When the edge of a leaf is cut into very minute notches, the word *crenulate* is used.

CRE'MOR, in chemistry, the cream, or that which floats on the top of a liquid, and is skimmed off.

COLOURED CRAYONS ARE MADE WITH FINE PIPE OR CHINA CLAY PASTE, INTIMATELY MIXED WITH EARTHY OR METALLIC PIGMENTS, AND THEN MOULDED.

NO SHIP IS ADMITTED TO BE A BRITISH SHIP, UNLESS DULY REGISTERED AND NAVIGATED AS SUCH BY A "CREW," THREE FOURTHS OF WHICH ARE BRITISH.

CREMO'NA, in music, an appellation for the superior sort of violins, which were originally made at Cremona.

CRENOPH'YLAX, in antiquity, a magistrate at Athens, who had the inspection of fountains.

CREPUN'DIA in antiquity, a term used to express such things as were worn as ornaments by children, as rings, jewels, &c., which might serve as tokens whereby they afterwards might be recognized, or as an inducement for others to take charge of them.

CREPITA'TION, the crackling noise made by some salts during the process of calcination.

CREPUS'CULUM or CREPUSCLE, the twilight, which begins and ends when the sun is 18 degrees below the horizon. It is occasioned by the refraction of the sun's rays.

CRESCEN'DO, in music, an Italian term for the gradual swelling of the notes over which it is placed.

CRES'CENT, the increasing or new moon, which, when receding from the sun, shows a curving rim of light, terminating in points or horns.——The Turkish standard, on which a crescent is depicted; and, figuratively, the Turkish power or empire of the crescent. ——In heraldry, it is an honourable ordinary, or a mark of distinction for the second sons of families, or those descended from them.

CRESCEN'TIA, in botany, a genus of plants, class 14 *Didynamia*, order 2 *Angiospermia*. The species are the *Crescentia cujete*, or narrow-leaved calabash-tree, and the *Crescentia cucurbitina*, or broad-leaved calabash-tree.

CRESS, the name of several species of plants; of which the most useful are water-cresses, which are eaten as a salad, and are valued in medicine for their antiscorbutic qualities. They grow on the banks of rivulets and other moist places.

CREST, the plume of feathers or other material on the top of the ancient helmet. The crest is considered a greater criterion of nobility than the armour generally, and therefore forms an important subject in the science of heraldry.

CRE'TA, a genus of earths, of the calcareous order, which, by a chemical analysis, is found to consist of carbonate of lime, carbonic acid, &c. It is soluble in acids, and calcines in the fire.

CRETA'CEOUS, partaking of the qualities of, or abounding in chalk.

CREUX, a French term used in sculpture, where the lines and figures are cut below the surface of the substances engraved, and thus stands opposed to *relievo*, which latter term intimates the prominence of the lines and figures which appear above the surface.

CREW, the company of seamen belonging to a ship or boat.

CRIB'RIFORM, in anatomy, a term applied to the laminæ of the ethmoid bone, through which the fibres of the olfactory nerve pass to the nose.

CRIBRO'SUM OS, in anatomy, called also *os ethmoides*, a bone situated internally in the fore part of the basis of the skull. The uses of it are to be a principal part of the organ of smelling, and to give a very great extent to the pituitary membrane in a small compass.

CRICK'ET, an active, manly game, played with bats and a ball, and which is almost peculiar to this country. The number of the party on each side is eleven, who alternately take the innings, and alternately the bowling and watching.——*Cricket*, the *Gryllus*, in zoology, a harmless insect of the grasshopper species, common near ovens, and fire-places. Their noise, called *chirping*, is produced merely by the friction of the bases of their *elytra*, or wing-cases, against each other.

CRICOI'DES, in anatomy, a cartilage of the larynx, called also the annular cartilage.

CRIM'INAL, in the sense usually applied, signifies, a person indicted or charged with a public offence, and one who is found guilty.

CRIME, the transgression of a law, either natural or divine, civil or ecclesiastic. In the general sense of the word, crimes are understood to be offences against society or morals, as far as they are amenable to the laws. To this we may add, in order more clearly to distinguish between words often esteemed synonymous, that actions contrary to the precepts of religion are called *sins;* actions contrary to the principles of morals are called *vices*; and actions, contrary to the laws of the state, are called *crimes*.

CRITCH'TONITE, a mineral, occurring in primitive rocks with octahedrite. It is of a velvet black colour, and crystalizes in very acute small rhomboids.

CRIN'GLE, in marine language, a hole in the bolt-rope of a sail, to receive the ends of the ropes by which the sail is drawn up to its yard, or to extend the leech by the bow-line-bridles.——*Iron cringles*, or *hanks*, are open rings running on the stays, to which the heads of the stay-sails are made fast.

CRI'SIS, in medicine, according to Galen, is a sudden change, either for the better or the worse, indicative of recovery or death. In its more general sense, it denotes that stage of a disorder from which some judgment may be formed of its termination. At the approach of a crisis, the disease appears to take a more violent character. If the change is for the better, the violent symptoms cease with a copious perspiration, or some other discharge from the system. After a salutary crisis, the patient feels himself relieved, and the dangerous symptoms cease. —— By a *crisis* is also meant the point of time when an affair is arrived at its height, and must soon terminate or suffer a material change.

CRISP, in botany, an epithet for a leaf folded over and over, at the edges, which are always serrated, dentated, or lacerated. *Crispature* is the state of its being curled.

IN THE ANCIENT TOURNAMENTS, THE CAVALIERS HAD PLUMES OF FEATHERS, ESPECIALLY THOSE OF OSTRICHES AND HERONS, FOR THEIR CRESTS.

CRISTATE, or CRISTATED, a botanical epithet for having an appendage like a tuft or crest, as some anthers and flowers.

CRITE'RION, any established rule, principle, or fact, which may be taken as a standard to judge by, and by which a correct judgment may be formed.

CRITHOMANCY, a kind of divination by means of the dough of cakes, and the meal strewed over the victims, in ancient sacrifices.

CRI'TIC, a person who, according to the established rules of his art, is capable of judging with propriety of any literary composition, or work of art, particularly of such as are denominated the Fine Arts. To which may be added, as within the province of a critic, that he should be able to explain what is obscure, to supply what is defective, to amend what is erroneous, and to reconcile the discrepancies he may meet with between different authors who have treated on the subject under review.

CRI'TICISM, the art of judging with propriety concerning any work of literature or art, and of giving the result of that judgment to the public with candour.

CRITI'QUE, a skilful examination of the merits of a performance, with remarks on its beauties and faults.

CRO'CEOUS, resembling saffron.

CROC'ODILE, in zoology, a large and ferocious animal of the genus *Lacerta*. It is amphibious, has a naked body, with four feet and a tail, and grows to the length of sixteen or eighteen feet. It inhabits the large rivers in Africa and Asia, and lays its eggs in the sand to be hatched by the sun.

CRO'CUS, in chemistry, a metal calcined to a red or deep yellow colour.——In botany, a genus of plants, class 3 *Triandria*, order 1 *Monogynia*.

CROIS'ES, in English antiquity, pilgrims bound for the Holy Land, or such as had been there; so called from a badge they wore in imitation of a cross. The knights of St. John of Jerusalem, created for the defence and protection of pilgrims, were particularly called *croises*; and so were all those of the English nobility and gentry, who, in the reigns of Henry II. Richard I. Henry III. and Edward I. were *cruce signati*, that is, devoted for the recovery of Palestine.

CROM'LECH, in British antiquity, large, broad, flat stones raised upon other stones set up to support them. They are common in Angleseа, and are supposed to be remains of druidical altars.

CROSS, in antiquity, an instrument of ancient vengeance, consisting of two pieces of timber, crossing each other, either in the form of a T or an X. That on which our Saviour suffered, is represented on coins and other monuments to have been of the former kind. This punishment was only inflicted on malefactors and slaves, and was thence called *servile supplicium*. The most usual method was to nail the criminal's hands and feet to this gibbet, in an erect posture; though there are instances of criminals so nailed with their head downward.——Cross, the ensign of the Christian religion; and hence, figuratively, the religion itself. Also, a monument with a cross upon it to excite devotion, such as were anciently set up in market places.—— In theology, the doctrine of Christ's sufferings and of the atonement.——*Cross*, in heraldry, the most ancient and the noblest of all the honourable ordinaries, formed by the meeting of two perpendicular with two horizontal lines, so as to make four right angles in the figure of a cross.

CROSS'-BILL, in ornithology, the *eloxia curvirostra*, a bird so called because the mandibles of its beak cross each other.

CROSS'-BOW, a missive weapon formerly much used, which was strung and set in a shaft of wood, with a trigger, &c.

CROSS'LET, in heraldry, a little or diminutive cross: the shield is frequently seen covered with crosslets. Also, fesses and other honourable ordinaries, charged or accompanied with crosslets.

CROSS'-EXAMINATION, in law, a close and rigid examination of a witness by the counsel of the adverse party, consisting of cross questions, in order to elicit the truth.

CROSS-BAR-SHOT, a bullet with an iron bar passing through it, and standing out a few inches on each side; used in naval actions for cutting the enemy's rigging.

CROSS-CUT-SAW, a saw for cutting timber crosswise.

CROSS'-STAFF, an instrument to take the altitude of the sun or stars.

CROSS'-STONE, a mineral of a grayish white colour, called also *harmostone*, occuring in double and single crystals.

CROSS'-TREES, pieces of timber in a ship, supported by the cheeks and trestle-trees, at the upper ends of the lower masts, to sustain that which is above, and to extend the top-gallant shrouds.

CROTCH'ET, in music, half a minim. ——In printing, this mark, [ ], to separate what is not the necessary part of a sentence.

CRO'TON OIL, one of the most valuable of the late additions to the materia medica, is expressed from the seeds of an East Indian plant. It is so strongly purgative, that one drop is a full dose, and half a drop will sometimes produce a powerful effect. In the hands of an experienced physician it is of great value, but it is so extremely active that it should never be used without the greatest caution.

CROUP, in medicine, the disease called *cynanche trachealis*, an affection of the throat, accompanied with a hoarse, difficult respiration. It mostly attacks young children, who are suddenly seized with a difficulty of breathing and a crouping noise. The application of cold seems to be the general cause of the disease, and it is consequently more prevalent in winter and spring than in the summer.

CROUPA'DE, in the manege, a leap in which the horse pulls up his hind legs, as if he drew them up to his belly.

CROTALUS, the rattle-snake, a genus of

THE EMPEROR CONSTANTINE THE GREAT IS SUPPOSED TO HAVE BEEN THE FIRST WHO USED THE CROSS AS A MILITARY EMBLEM OR BANNER.

THE EMPRESS HELENA (CONSTANTINE'S MOTHER) FOUND, AS IT IS SAID, THE CROSS ON WHICH CHRIST SUFFERED, AND CONVEYED IT TO CONSTANTINOPLE.

VINEGAR IS BOILED FOR PICKLING, IN ORDER THAT THE IMPURITIES, COAGULATED BY HEAT, MAY BE SEPARATED BY STRAINING, WHEN COOL.

THE BEST CRUCIBLES ARE FORMED FROM A PURE FIRE CLAY, MIXED WITH FINELY GROUND CEMENT OF OLD CRUCIBLES, AND A PORTION OF PLUMBAGO.

serpents, furnished with poisonous fangs. The serpents of this family seldom bite except when irritated, or for the purpose of securing their prey. The rattle consists of hollow, hard, dry, and semi-transparent bones, resembling, in some measure, the shape of the human *os sacrum:* the tip of every uppermost bone runs within two of the bones below it; by which contrivance they have not only a moveable coherence, but also are enabled to make a more multiplied sound, each bone hitting against the other two at the same time. The number of joints in the rattle of each reptile is various, from five to forty. The poisonous secretion is discharged from the fangs of the dog teeth, or tusks placed without the upper jaws, after the manner of the viper; and after the first time the animal seems progressively to lose its power of poisoning, till it has had time to recruit itself by a respite of some hours.

CROUT, KROUT, or SOUR-CROUT, is cabbage chopped fine, and pickled. It is made by placing chopped cabbage in layers in a barrel, with salt and carraway seeds sprinkled between the layers, then pressing it down, and suffering it to remain till it has undergone fermentation. It is considered an efficacious preservative against the scurvy, and is used at sea, particularly in the Russian navy.

CROW, in ornithology, a species of *Corvus*, about the size of the largest tame pigeon, and of a fine deep black colour. The crow is a voracious fowl, feeding on carrion, grain, &c.——*Scare-crow*, the black *Larus*, with grey wings and red legs.

CROW-BAR, in mechanics, an iron lever with a claw at one end, and a sharp point at the other: used for raising and moving weights.

CROW'-FOOT, a complication of small cords, spreading out from a long block: used on board of ships, for suspending the awnings, or keeping the top-sails from striking against the tops.

CROW'S'-BILL, in surgery, a kind of forceps, for extracting bullets and other things from wounds.

CROW'S'-FEET, in the art of war, an iron instrument with four points, thrown upon breaches, or in passes where the enemy's cavalry are expected. [See *Caltrop.*]

CROWN, an ornamental badge of regal power, worn on the head by sovereign princes.——The top of the head; also the top of any elevated object.——In architecture, the uppermost member of a cornice.——Among jewellers, the upper work of the rose diamond.——An English silver coin, of the value of five shillings.——In botany, an appendage to the top of a seed, which serves to bear it in the wind.——Among the various crowns and wreaths in use among the Greeks and Romans were the following: *Corona aurea* (the golden crown); the reward of remarkable bravery. *Corona castrensis;* given to him who first entered the camp of an enemy. *Corona civica;* one of the highest military rewards: it was given to him who saved the life of a citizen. *Corona convivialis;* the wreath worn at feasts. *Corona muralis;* given by the general to the soldier who first scaled the enemy's wall. *Corona navalis;* given to him who first boarded and took an enemy's vessel: it was next in rank to the civic crown. *Corona nuptialis;* a crown or wreath worn by brides. *Corona obsidionalis;* a reward given to him who delivered a besieged town, or a blockaded army. It was one of the highest military honours, and very seldom obtained. *Corona triumphalis;* a wreath of laurel which was given by the army to the *imperator*, who wore it on his head at the celebration of his triumph.

CROWN-GLASS, the finest sort of window-glass.

CROWN-IMPE'RIAL, a plant of the genus *Fritillaria*, having a beautiful flower.

CROWN-IMPERIAL-SHELL, a beautiful species of *Voluta*, the head of which is surrounded with a series of sharp-pointed tubercles, so as to resemble an open crown: it has also two broad and very beautiful zones running round it.

CROWN'-OFFICE, an office belonging to the court of Queen's Bench, in which the attorney-general exhibits informations for crimes and misdemeanors.

CROWN'-POST, in building, a post which stands upright in the middle, between two principal rafters.

CROWN'-WHEEL, the upper wheel next the balance in a watch, and which drives the balance.

CROWN'-WORK, in fortification, an outwork running into the field, consisting of two demi-bastions at the extremes, and an entire bastion in the middle, with curtains. It is designed to gain some advantageous post, and cover the other works.

CROYL'STONE, in mineralogy, crystalized cauk.

CRU'CIAL, in surgery, an epithet for transverse, or in the form of a cross; as, a *crucial* incision.

CRU'CIBLE, a vessel or melting-pot, made of clay, and so tempered and baked as to endure the greatest fire. It is used in chemical operations, and by workers in gold and silver. Silver, platina, and iron are also used occasionally as crucibles.

CRUCIFIX'ION, the act or punishment of putting to death by nailing or fastening a person to a *crucifix*, or cross.

CRU'CIFORM, in botany, an epithet for flowers consisting of four petals disposed in the form of a cross.

CRU'DITY, among physicians, is applied to undigested substances in the stomach; to humours in the body which are unconcocted, and not prepared for expulsion; and to the excrements.

CRU'ISER, a small armed vessel that sails to and fro in quest of the enemy, to protect the commerce of its own nation, or for plunder.

CRUPELLA'RII, in antiquity, nobility among the Gauls, who were armed with a complete harness of steel.

CRU'OR, sometimes signifies the blood in general; sometimes only the venous

blood; and at others, extravasated or coagulated blood; but the word is most frequently used for the red globules of blood, in distinction from the limpid or serous part.

CRUSA'DES, the name by which the wars or military expeditions were distinguished, that were carried on by the Christian nations of the West, from the end of the 11th to the end of the 13th century, for the conquest of Palestine. They were called crusades, because all the warriors fought under the banner of the *cross*, and wore that emblem on their clothes. The Christians had long grieved that the Holy Land, where Jesus had lived, taught, and died for mankind, where pious pilgrims resorted to pour out their sorrows, and ask for aid from above at the tomb of their Saviour, should be in the power of unbelievers. The dawn of civilization and mental cultivation had just commenced. They were at that period in a state to receive a strong religious excitement; the spirit of adventure burned within them; and their imaginations were also easily roused by the reports of the riches of the East. The Pope considered the invasion of Asia as the means of promoting Christianity amongst the infidels, and of winning whole nations to the bosom of the church; monarchs expected victory and increase of dominion; and their subjects were easily persuaded to engage in the glorious cause! Yet army after army was destroyed; and though some brilliant victories served to exhibit the soldiers of Christendom as heroes of a valorous age, and the holy city of Jerusalem was more than once under their dominion, the Christian empire on the continent of Asia was eventually overthrown, and the dominion of the Mamelukes and Sultans established. But by means of these joint enterprizes, the European nations became more connected with each other; feudal tyranny was weakened; a commercial intercourse took place throughout Europe, which greatly augmented the wealth of the cities; the human mind expanded; and a number of arts and sciences, till then unknown by the western nations, was introduced.

CRU'RAL, in anatomy, an epithet given to the artery which conveys the blood to the *crura*, or legs, and to the vein by which this blood returns towards the heart.

CRUSTA'CEA, or Crusta'ceous Fish, are those covered with shells, consisting of several jointed pieces or scales, as crabs, lobsters, &c. These are generally softer than the shells of the testaceous fish, which consist of a single piece, and commonly thicker and stronger than the former, such as those of the oyster, scallop, cockle, &c. The *crustacea* consist almost entirely of the three tribes, viz. *cancer*, *oniscus*, and *monoculus*.

CRUSTAL'OGY, that part of zoology which treats of crustaceous animals, arranging them in orders, tribes, and families, and describing their forms and habits.

CRU'YSHAGE, a fish of the shark kind, having a triangular head and mouth.

CRY'OLITE, in mineralogy, a fluate of soda and alumine, of a white or yellowish gray colour, occurring in masses of a foliated structure. It is found in Greenland.

CRYOPH'ORUS, an instrument for showing the relation between evaporation at low temperatures and the production of cold.

CRYPT, a subterranean chapel or oratory; or a vault under a church for the interment of bodies.

CRYPTOGA'MIA, the 24th class of plants in the Linnæan system; comprehending those whose fructification is concealed or inconspicuous, as ferns, mosses, liverworts, and mushrooms.

CRYPTOG'RAPHY, the art of writing in cipher, or secret characters.

CRYPTOL'OGY, secret or enigmatical language.

CRYS'TAL, a species of stone of the quartz kind, belonging to the siliceous class. When no accidental circumstance has interrupted the crystalization (for it must once have been in a soft state), it is always of an hexagonal or six-sided angular form, pointed at both ends. This description of crystal is commonly termed *rock crystal*.——Crystal, in chemistry and mineralogy, an inorganic body, which has assumed the form of a regular solid, terminated by a certain number of plane and smooth surfaces; or a salt which assumes a regular and solid form, on the gradual cooling of the solution.——*Crystal Glass*, a factitious crystal, more perfect in its composition and manufacture than common glass. It is frequently cut; and vases, lustres, and other ornaments are made of it.——*Iceland Crystal*, a variety of calcareous spar, or crystalized carbonate of lime, brought from Iceland, which is remarkable for its double refraction.

CRYS'TALINE, transparent and pure, resembling crystal.——*Crystaline Heavens*, in ancient astronomy, two spheres imagined between the primum mobile and the firmament, in the Ptolemaic system.——*Crystaline Humour*, (of the eye), a very white, transparent, firm substance, adapted like a glass lens, to converge rays of light situated behind the iris, in the vitreous humour of the eye.

CRYS'TALITE, in mineralogy, a name given to whinstone, cooled slowly after fusion.

CRYSTALIZA'TION, the act or process of reducing any salt into a regular form by dissolving it in a menstruum, and allowing it to cool until it shoots into the bodies called crystals. This process is the effect of refrigeration, or evaporation.

CRYSTALOG'RAPHY, the doctrine or science of crystalization, teaching the principles of the process, the forms which crystals assume, &c.

CU'BATURE, in geometry, the finding exactly the solid or cubic contents of a body.

CUBE, in geometry, a regular solid body, consisting of six square and equal sides, and containing equal angles. The solidity of

THERE IS A GREAT VARIETY IN THE FORM OF CRYSTALIZED SALTS, AND EACH SALT PRESERVES ITS OWN PECULIAR FORM AND CHARACTER.

FROM THE OBSERVATIONS WHICH HAVE BEEN MADE, IT IS BELIEVED THAT THE CUCKOO MIGRATES FROM EUROPE TO THE COASTS OF AFRICA.

ANIMALS THAT RUMINATE, OR CHEW THE CUD, CAN PERFORM THAT OPERATION BY A VOLUNTARY POWER IN THE ŒSOPHAGUS.

any cube is found by multiplying the superficial area of one of the sides by the height.—— *Cubic Number*, in arithmetic, that which is produced by the multiplication of a square number by its root; thus, 64 is a cube number, and arises by multiplying 16, the square of 4, by the root 4.—— *Cube Root*, the side of a cube number; thus 3 is the cube root or side of 27.

CU'BEB, in botany, the fruit of the *Piper Scubebæ*. It is less than pepper, good for strengthening the stomach, and aromatic.

CU'BIC, or CU'BICAL, having the form of a cube, or that may be contained within a cube. Thus, a *cubic* foot of water is the water that may be contained within six equal sides, each a foot square.

CU'BIT, an ancient measure, equal to the length of a man's arm, from the elbow to the tip of the middle finger. Among different nations the length of the cubit differed. The English was 18 inches, the Roman rather less, and the cubit of the Scriptures is supposed to have been 22 inches.

CU'BITANS, in anatomy, an epithet for two muscles of the wrist, one of which, called the *externus*, serves to extend the wrist; and the other, the *internus*, to bend it.

CU'BITUS, in anatomy, a bone of the arm, reaching from the elbow to the wrist. The cubitus, for the sake of the more easy and varied motion, is composed of a binary number of bones, called the *cubitus*, or *ulna*, and the *radius*. The situation of the ulna is interior, its length is greater than that of the radius, and has a motion of flexion and extension. The epithet *cubital* is accordingly used; as, the *cubital* nerve, artery, or muscle.

CUCK'OO-SPITTLE, a white froth or spume very common on many plants in the spring, which forms the nidus of a sort of cicada.

CUCU'BALUS, a genus of plants, class 10 *Decandria*, order 3 *Trigynia*. The species are mostly perennials, and consist of the various campions.

CU'CULUS, or CUCKOO, a genus of birds belonging to the order *Picæ*. They lay their eggs in the nests of other birds, chiefly in that of the hedge-sparrow, from which the young cuckoos turn out the young sparrows. The cuckoo arrives in Britain about the middle of April, and departs in the first week of July. To this shortness of the period of residence, joined with the numerous progeny which nature has destined it to yield, ornithologists attribute the motive for this singular arrangement in the economy of nature; for by means of this resource, cuckoo's eggs are laid in an abundance that could not be effected if the bird was to sit herself.

CU'CUMBER, the name of a plant and its fruit, of the genus *Cucumis*. The flower is yellow and bell-shaped; and the stalks trail on the ground, or climb by their creepers. The fruit is cold, watery, and by many thought unwholesome.

CU'CUMIS, a genus of plants, class 21 *Monoecia*, order 10 *Syngenesia*. This genus comprehends all animals with herbaceous scandent stems, as the gourd, cucumber, and melon.

CU'CURBIT, a chemical vessel in the shape of a gourd. It is used in distillation: and with its head and cover, constitutes the alembic.

CUCURBITA'CEÆ, one of Linnæus's natural orders of plants, comprehending those which resemble the gourd, as the cucumber, melon, pumpkin, &c.——The epithet *cucurbitaceous* is accordingly given to any fruit resembling a gourd.

CUD, the food which ruminating animals chew over-again; from whence, *to chew the cud*, signifies, to ponder, think, or ruminate upon a thing.

CUD'DY, in large ships, a place lying between the captain-lieutenant's cabin, and the quarter-deck, under the poop. It is divided into partitions for the master and other officers. Also, a sort of cabin or cook-room, in the fore-part or near the stern of a lighter, or barge of burden.

CUE, the last words of a speech, which a player, who is to answer, catches and regards as an intimation to begin. Also, a hint given to him of what and when he is to speak.

CUIRASS', a piece of defensive armour, made of iron plate, well hardened, and covering the body from the neck to the girdle. ——*Cuirassiers*, heavy cavalry armed with a cuirass. In former times cuirasses were very common, but appear to have been disused in England about the reign of Charles II. The lance having, of late years, again been introduced, the cuirass has been revived among the European cavalry.

CUL DE LAMP, in architecture, a term used for several decorations, in vaults and ceilings.

CUL'DEES, in church-history, an order of priests, formerly inhabiting Scotland and Ireland. Being remarkable for the religious exercises of preaching and praying, they were called, by way of eminence, *cultores Dei*. After having exercised a great influence throughout the country, they are said to have been overthrown by the increase of the papal power, and the institution of monasteries, more congenial to the aspiring views of the see of Rome.

CU'LEUS, in Roman antiquity, the largest measure of capacity for liquids, containing forty *urnæ*, equal to 180 gallons.

CU'LEX, in entomology, a genus of two-winged flies, the mouth of which are tubular, but exceedingly slender and filiform. Under this genus are comprehended the gnats and humble bees.

CULI'NA, in antiquity, that part of the funeral pile in which the banquet was consumed.——*Culinæ*, a burial-ground for the poor.

CUL'LIAGE, a barbarous and immoral practice, whereby the lords of manors anciently assumed a right to the first night of their vassals' brides.

CULM, in botany, the stalk or stem of corn or grasses, usually jointed and hollow.

——Also, a species of fossil coal, found in small masses, difficult to be ignited, and burning with little flame, but producing an unpleasant smell.

CULMIF'EROUS, in botany, an epithet for such plants as have a smooth jointed stalk, usually hollow, and at each joint wrapped about with single, narrow, sharp-pointed leaves, and their seeds contained in chaffy husks, as wheat, rye, barley, &c.

CULMINA'TION, in astronomy, the passing of any heavenly body over the meridian, or its greatest altitude for the day. Hence *culmination* is used, metaphorically, for the condition of any person or thing arrived at the most brilliant or important point of its progress.

CULMIN'EÆ, the 26th of the Linnæan natural order of plants, consisting of the grasses.

CUL'PRIT, in law, a word applied in court to one who is indicted for a criminal offence.

CULTIVA'TION, in a general sense, the art and practice of tilling and preparing land for crops; but it means also the study, care, and practice necessary to the *cultivation* of our talents and the improvement of our minds.

CUL'VERIN, a long slender piece of ordnance, serving to carry a ball to a great distance.

CUL'VERTAILED, in ship-building, the fastening one timber into another by a dove-tailed joint.

CUMA'NA, in botany, an Indian tree resembling the mulberry, both in its appearance and fruit; the latter of which has a medical use.

CUM'BULU, in botany, a high tree growing in Malabar, the root of which is said to be useful as a decoction in certain febrile diseases.

CU'MERUM, in antiquity, a large covered basket, used at weddings for carrying the household stuff, &c. belonging to the bride.

CUMI'NUM, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*. The only species is the *Cuminum cyminum*, an annual.

CUM'MIN-SEED, a long, slender seed, of a rough texture, unctuous when bruised, of a strong smell, and a pungent taste.

CU'MULUS, a large cloud, flat at the base, and rounded in its upper parts.

CU'NEUS, the wedge, in mechanics. ——*Cuneus*, in antiquity, a company of infantry, drawn up in form of a wedge, the better to break through the enemy's ranks. Also, the seats and benches on which the spectators sat in a theatre, which were narrow near the stage, and broad behind.——*Cuneus*, in natural history, a kind of fossil mussel-shells, with one side much longer than the other, and found in vast numbers in many parts of the kingdom.

CU'NEIFORM, an appellation given to whatever resembles a wedge; as, in botany, a cuneiform leaf.

CUP'BEARER, an officer of the king's household, who was formerly an attendant at a feast.

CU'PEL, a shalloy chemical vessel made of earth, ashes, or burnt bones, in which assay-masters try metals. It retains them while in a metallic state, but when changed by fire into a fluid scoria, it absorbs them.

CU'POLA, in architecture, a roof or vault rising in a circular form, otherwise called the *tholus* or *dome*. The ancients constructed their cupolas of stone; the moderns, of timber, covered with lead or copper. The finest cupola, ancient or modern, is that of the Pantheon at Rome. Among some of the handsomest modern cupolas, is that on the Bank of England, St. Peter's at Rome, the Hotel des Invalides at Paris, and St. Paul's, London.

CUP'PING, in surgery, the operation of applying the cupping-glass with scarificators, for the purpose of drawing away blood or humours.——*Cupping glass*, a glass vessel like a cup, to be applied to the skin before and after scarification, for drawing blood.

CU'PREOUS, resembling copper, or partaking of its qualities.

CUPRES'SUS, in botany, a genus of trees, of which the most beautiful species is the horizontal cypress, which is the common timber in some parts of the Levant, and is said to resist the worm, the moth, and putrefaction. The Athenians used to bury their dead in coffins of cypress, and the mummy chests brought with those bodies out of Egypt are made of cypress wood.

CUPRIF'EROUS, producing or affording copper; as, *cupriferous* silver.

CU'RATE, an officiating, but unbeneficed clergyman, who performs the duty of a church, and receives a salary from the incumbent of the living.

CURA'TOR, among civilians, a person regularly appointed to manage the affairs of minors, or persons mad, deaf, dumb, &c. There are also curators for the estate of debtors, and of persons dying without heirs.——Among the Romans, a trustee of the affairs and interests of a person emancipated or interdicted.

CURCU'LIO, in entomology, a genus of insects, which infest granaries and live upon the grain.

CURCU'MA, in botany, an Indian plant called Turmeric.——A genus of plants in the Linnæan system, class 1 *Monandria*, order 1 *Monogynia*.

CUR'FEW, a law introduced from Normandy into England by William the Conqueror, that all people should put out their fire and lights at the ringing of a bell, at eight o'clock. The word is derived from the French *couvre-feu*.

CU'RIA, in Roman antiquity, a certain division, or portion of a tribe. Romulus divided the people into thirty *curiæ*, or wards; and there were ten in every tribe, that each might keep the ceremonies of their feasts and sacrifices in the temple, or holy place, appointed for every curia. The priest of the curia was called *curio*.

EVERY CLERGYMAN THAT OFFICIATES IN A CHURCH; WHETHER HE BE THE INCUMBENT OR A SUBSTITUTE, IN THE LITURGY IS CALLED A CURATE.

——CURIA, in law, signifies generally a court, but it was taken particularly for the assemblies of bishops, peers, &c. of the realm, called *solemnis curia*, *curia publica*, &c.

CUR'LEW, an aquatic fowl, of the genus *Scolopax*, and the grallic order. It is of an ash colour diversified with black; frequents the sea-shore in winter, and in summer retires to the mountains. There is also another bird so called, which is larger than a partridge, and frequents the cornfields in Spain.

CUR'RANT, the fruit of a well-known shrub belonging to the genus *Ribes*. There are many varieties, red, white, and black. A small kind of dried grape, imported from the Levant, is also called by the same name.

CUR'RENCY, in commerce, bank-notes or other paper-money issued by authority, and which are continually passing current for coin.

CUR'RENTS, in navigation, certain settings of the stream, by which ships are compelled to alter their course, and submit to the motion impressed upon them by the current. The causes of currents are very numerous. The waters may be put in motion by an internal impulse; by a difference of heat and saltness; by the inequality of evaporation in different latitudes; and by the change in the pressure at different points of the surface of the ocean. The existence of cold strata, which have been met with at great depths in low latitudes, prove the existence of a low current, which runs from the pole to the equator. It proves likewise, that saline substances are distributed in the ocean, in a manner not to destroy the effect produced by different temperatures.——It is well known also that there are different *currents of air*.

CUR'RYING, the art of dressing skins after they are tanned, for the purposes of the shoemaker, coach and harness-maker, &c., by giving them the necessary smoothness, lustre, colour, and suppleness. The person working at, or carrying on this business, is called a *currier*.

CUR'SITOR, a clerk belonging to the court of chancery, whose business it is to make out original writs.

CURTAIN, in a general sense, a cloth hanging round a bed, or at a window, which may be contracted, spread, or drawn aside at pleasure. Also, a cloth-hanging used in theatres, to conceal the stage from the spectators.——In fortification, the *curtain* is that part of the rampart which is between the flanks of two bastions, bordered with a parapet, behind which the soldiers stand to fire on the covered way and into the moat.

CURTA'TION, in astronomy, the interval between a planet's distance from the sun and the curtate distance. The *curtate distance* is the distance of a planet from the sun to that point, where a perpendicular let fall from the planet meets with the ecliptic.

CU'RULE CHAIR, in Roman antiquity, a chair, or stool, adorned with ivory, wherein the chief magistrates of Rome had a right to sit. The curule magistrates were the ædiles, the prætors, censors, and consuls. This chair was placed in a kind of chariot, whence it had its name.

CURVATURE *of a line*, is the peculiar manner of its bending or flexure, by which it becomes a curve of such and such peculiar properties.

CURVET, in horsemanship, a particular leap of a horse, when he raises both his fore legs at once, equally advanced, and as his fore legs are falling, he raises his hind legs, so that all his legs are from the ground at once.

CUSP, in geometry, the point or corner formed by two parts of a curve meeting, and there terminating.——In astronomy, a term for the horns of the moon.

CUSP'IDATE, or CUSP'IDATED, a term in botany, for a leaf, &c. having a sharp end, like the point of a spear, or terminating in a bristly point.

CUS'TARD-APPLE, in botany, a species of *Annona*, growing in the West Indies, whose fruit is of the size of a tennis ball, of an orange colour, containing a yellowish pulp of the consistence of custard.

CUSTOM, in law, long established practice or usage, which constitutes the unwritten law, and long consent to which gives it authority.

CUSTOMS, in political economy, the duties, toll, tribute, or tariff, payable to the king upon merchandize exported and imported, and which form a branch of the perpetual taxes.

CUSTOS ROTULO'RUM, the keeper of the rolls and records of the sessions of the peace, and also of the commission of the peace itself. He is usually a nobleman, and always a justice of the peace, of the quorum in the county where he is appointed.——*Custos Brevium*, the principal clerk belonging to the Common-pleas.——*Custos oculi*, in surgery, an instrument for preserving the eye in some operations.

CUTA'NEOUS, an epithet for whatever belongs to or affects the skin; as, a *cutaneous* eruption, &c.

CU'TICLE, in anatomy, the scarf-skin, a thin membrane closely lying upon the skin or *cutis*, of which it seems a part, and to which it adheres very firmly.

CU'TIS, in anatomy, the *derma*, or inner skin, which lies under the cuticle: it is full of pores, nerves, fibres, lymphatic ducts, &c. and is called the *cutis vera*, or true skin, in distinction from the cuticle.

CUT'LAS, a broad curving sword, used by seamen in boarding, &c.

CUT'LERY, a term applied to all cutting instruments made of steel. Although in a general sense it comprises all those articles denominated edge-tools, it is more particularly confined to the manufacture of knives, scissars, razors, surgical instruments, and swords. Those articles which require the edge to possess great tenacity, at the same time that superior hardness is not required, are made from sheer-steel. The finer kinds of cutlery are made from steel which has been in a state of fusion, and which is

termed cast-steel, no other kinds being susceptible of a fine polish. Razors are made of cast steel, the edge of a razor requiring the combined advantages of great hardness and tenacity. After the razor blade is forged, it is hardened by gradually heating it to a bright red heat, and plunging it into cold water. It is tempered by heating it afterwards till a brightened part appears of a straw colour. The manufacture of penknives is divided into three departments; the first is the forging of the blades, the spring, and the iron scales; the second, the grinding and polishing of the blades; and the third, the handling, which consists in fitting up all the parts, and finishing the knife. The blades are made of the best cast steel, and hardened and tempered to about the same degree with that of razors. But the beauty and elegance of polished steel is not displayed to more advantage than in the manufacture of the finer kinds of scissars.—Damascus was anciently famed for its razors, sabres, and swords; the latter especially, which possessed all the advantages of flexibility, elasticity, and hardness; while they presented a beautiful wavy appearance called the water. They are said to have been made from the interlacing of very minute wires of steel and iron welded together in alternate wormings, and the waving caused by quenching the blade in a solution of common alum. Various other cities and countries have also been famous at different periods for the manufacture of good cutlery; as London, Salisbury, and Sheffield, at the present time are, for admirable penknives and surgical instruments.

CUT'TER, a boat attached to a vessel of war, which is rowed with six oars, and is employed in carrying light stores, passengers, &c.——Also, a vessel with one mast and a straight running bowsprit, which may be run in upon deck.

CUTTLE-FISH, in ichthyology, the *Sepia*, a genus of Mollusca. They have small arms, with serrated cups, by which they lay fast hold of anything: they have also two tentacula longer than the arms. When pursued they emit a black fluid that darkens the water, by which means they escape. This fluid is said to form an ingredient in India ink, and from that circumstance it is sometimes called the *ink-fish*. The back bone is converted into pounce.

CUT'-WATER, the fore part of a ship's prow, which cuts the water.——Also, a name for the *Ringcops*, or razor-bill, a species of water fowl.

CY'ANITE, in mineralogy, an argillaceous stone, of a blue or greenish gray colour.

CYAN'OGEN, carburetted azote, or the blue compound of carbon and azotic gas.

CYATH'IFORM, in the form of a cup or drinking-glass, a little widened at the top.

CY'ATHUS, in Roman antiquity, a liquid measure, containing four *ligulas*, or half a pint.——Also, a cup, which the Romans used to fill and drink from as many times as there were letters in the name of their patron or mistress.

CYC'LAMEN, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are tuberous, as the *Cyclamen corum*, or sow-bread, &c.

CY'CLAS, in botany, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*. The species are trees, natives of the Caribbee islands.

CYC'LE, in chronology, a certain period or series of numbers, which regularly proceed from the first to the last, and then return again to the first, and so circulate perpetually.——*Cycle of the Sun*, or *solar cycle*, a period of 28 years, in which the Sunday or Dominical letter recurs in the same order.——*Cycle of the Moon*, or *lunar cycle*, a period of 19 years, when the new and full moon recur on the same days of the month.——*Cycle of indiction*, a period of fifteen years, in use among the Romans, commencing from the third year before Christ. This cycle has no connection with the celestial motions; but was instituted, according to Baronius, by Constantine.

CYC'LOGRAPH, an instrument used for describing the arcs of circles.

CYC'LOID, a geometrical curve generated by the rotation of a circle along a line.——*Cycloidal*, the space contained between the curve, or crooked line, and the subtense of the figure.

CYCLOM'ETRY, a term sometimes used for the mensuration of circles.

CYCLOPÆ'DIA, the circle or compass of the arts and sciences; a common title for a book of this kind.

CYCLOP'IC, savage and gigantic; pertaining to those monsters in fabulous history, who are represented as having assisted Vulcan in forging the thunderbolts of Jove.

CYG'NET, in ornithology, a young swan.——In heraldry, a term when swans are collared about the neck with an open crown, to which a chain is affixed.

CYG'NUS, the Swan, in ornithology, a well known water fowl, ranked among the *anas* kind.——*Cygnus*, in astronomy, a constellation of the northern hemisphere.

CYL'INDER, in geometry, a solid body, supposed to be generated by the rotation of a parallelogram round one of its sides; or a long circular body of uniform diameter. If the generating parallelogram be rectangular, the cylinder it produces will be a right cylinder, that is, it will have its axis perpendicular to its base. If the parallelogram be a rhombus, or rhomboides, the cylinder will be oblique or scalenous.——*Cylinder*, in gunnery, the whole hollow length of a great gun; the bore.

CYL'INDROID, a solid body, approaching to the figure of a cylinder, but differing in some respects, as having the bases elliptical, but parallel and equal.

CYLIN'DRUS, in natural history, a genus of shell-fish, the shell of which is simple, without a hinge, formed of one continued piece, and of a figure approaching to that of a cylinder. Its animal inhabitant is called *limax*.

BY DIPPING A RAZOR IN HOT WATER, THE TEMPERATURE OF IT IS RAISED, AND THE FINENESS OF THE EDGE THEREBY INCREASED.

ACCORDING TO THE FABLES OF MYTHOLOGY, THE CYCLOPS' FORGES WERE VOLCANOES, AND THE ROARING WITHIN THEM THE SOUND OF THEIR HAMMERS.

CYMA'TIUM, CY'MA, or SI'MA, in architecture, a member or moulding of the cornice, the profile of which is waving, that is, concave at the top and convex at the bottom. When the concave part of the moulding projects beyond the convex part, the *cymatium* is denominated a *sima-recta;* but when the convex part forms the greatest projection, it is a *sima-reversa.*

CYM'BAL, a musical instrument used by the ancients, hollow, and made of brass, supposed to be somewhat like a kettle-drum. The modern *cymbals* used in military bands consist of two concave metal plates, which are occasionally struck together and flourished above the head of the player.

CYMBA'RIA, in botany, a genus of plants, class 14 *Didynamia,* order 2 *Angiospermia;* so called from its boat-shaped fruit. The whole plant is hoary, and is distinguished from all others by its ten-toothed calyx.

CYME, literally, a sprout or shoot; also a sort of flowering, where the florets do not all rise from the same point.

CYM'OPHANE, a mineral; called also *Chrysoberyl.* Its colour is green of different shades, and in hardness it ranks next to the sapphire.

CYMO'SÆ, the 63rd of the natural orders of Lynnæus, comprehending such plants as are disposed in the form of a cyme.

CYNAN'CHE, among physicians, an inflammation of the larynx. It is of several kinds, and comprehends the quinsey, croup, and malignant sore throat.

CYNAN'CHUM, in botany, a genus of plants, which are all shrubs or under-shrubs. The principal species are *Cynanchum viminale, Euphorbia, Apocynum,* &c.

CYNANTHRO'PIA, in medicine, the disease occasioned by the bite of a mad dog, wherein the patient avoids the light, and dreads the water.

CYN'IC, a man of a surly or snarling temper; a misanthrope.—The *Cynics* were a sect of ancient philosophers who valued themselves upon their contempt of riches and state, arts, sciences, and amusements.

CYN'IPS, the Gall-fly, a genus of insects, of which there are 35 species, chiefly found in the oak. The most beautiful gall is the production of the *cynips quercus gemmæ,* who piercing the terminal bud of the tree deposits its egg in the interior, and thereby, with the hatching and progressive growth of the larva, converts it from a healthy bud into a fine dark green gall, leafed like a rose-bud beginning to blow, about an inch in diameter, and held to the branch by a pedicle.

CYNOCEPH'ALUS, in zoology, a sort of ape with a head like a dog.

CYNODON'TES, in anatomy, dog-teeth, of which there are two in each jaw, one on each side betwixt the fore-teeth and the grinders.

CYNOGLOS'SUM, in botany, Hound's-tongue; a genus of plants, class 5 *Pentandria,* order 1 *Monogynia.*

CYNORRHO'DEN, in botany, the dog-rose; also the flower of the red lily.

CYNOREX'IA, in medicine, a canine appetite.

CYN'OSURE, in astronomy, a constellation near the north pole, consisting of seven stars, four of which are disposed like the four wheels of a chariot, and three lengthwise, like the beam; hence called the chariot or Charles's wain.

CYNOSU'RUS, in botany, a genus of plants, class 3 *Triandria,* order 2 *Digynia;* natural order *Gramina,* or Grasses. The species are mostly perennials.

CYPARIS'SÆ, in antiquity, fiery meteors, or atmospherical phenomena appearing in the night.

CY'PHONISM, in Grecian antiquity, a punishment inflicted upon criminals, by fastening a collar of wood round their necks, by which their heads were kept bowed down.

CY'PRESS TREE [see CUPRESSUS]; the most remarkable are the *Sempervirens* or common cypress, the evergreen American cypress or white cedar, and the *Disticha* or deciduous American cypress.

CYP'RINUS, in ichthyology, a genus of fishes, including the carp, barbel, gudgeon, tench, gold-fish, chub, and several other fresh-water fish.

CYRENA'ICS, a sect of ancient philosophers, so called from their founder, Aristippus of Cyrene, a disciple of Socrates. The great principle of their doctrine was, that the supreme good of man in this life is pleasure.

CYST, a bag which contains morbid matter in animal bodies.—*Cystic oxyde,* a peculiar substance supposed to be generated in the kidneys.

CYS'TICIS, in medicine, inflammation in the bladder. According to Cullen, a genus of diseases in the class *Pyrexiæ,* order *Phlegmasiæ.*

CYS'TIDES, in medicine, encysted tumours, or such as have their substance included in a membrane.

CYS'TOCELE, in surgery, a hernia or rupture formed by the protrusion of the urinary bladder.

CYSTOT'OMY, the practice of opening encysted tumours for the discharge of morbid matter.

CYTHA'RUS, in ichthyology, a sea-fish of the turbot kind.

CYT'ISUS, in botany, the Laburnum, or Bean Trefoil-tree.—Also, a genus of plants, class 17 *Diadelphia,* order 4 *Decandria:* the species of which are shrubs.

CYZICE'NA, in antiquity, a magnificent sort of banqueting-house, among the Greeks; so called from Cyzicus, a city famous for its sumptuous buildings.

CZAR, the title assumed by the emperors of Russia. The first that bore this title was Basil, the son of Basilides, under whom the Russian power began to appear, about 1470. The word is of old Sclavonic origin, and is nearly equivalent to *king.*

CZARI'NA, the title of the empress of Russia.

THE ART OF DACTYLOLOGY IS USUALLY TAUGHT, AND WITH GREAT SUCCESS, IN INSTITUTIONS FOR THE EDUCATION OF THE DEAF AND DUMB.

D

D, the fourth letter in the alphabet, is a dental articulation, having a kind of middle sound between the *t* and *th;* its sound being formed by a stronger impulse of the tongue to the upper part of the mouth, than is necessary in the pronunciation of the *t*. D, as a numeral, denotes 500; as an abbreviation it stands for Doctor, Domini, &c.; as M.D., Doctor of Medicine; D.D., Doctor of Divinity; A.D., Anno Domini. As a sign, it is one of the Dominical or Sunday letters; and in Music, it is the nominal of the second note in the natural diatonic scale of C.

DA'ALDER, a Dutch silver coin, of the value of a guilder and a half, or about 2s. 7d.

DAB, a small flat fish of the genus *Pleuronectes;* it is thinner and less than the flounder, and of a dark brown colour.

DA CAPO, in music, an Italian phrase signifying that the first part of the tune is to be repeated from the beginning. It is also used as a call or acclamation to the musical performer at concerts, &c., to repeat the air or piece which has just been finished.

DACE, a river fish of the carp kind; it is longer and more slender than the roach.

DACRYGELO'SIS, in medicine, a species of insanity, in which the maniac laughs and weeps at the same time.

DACTYLIC, an epithet for verses which end with a dactyl instead of a spondee.

DACTYL, a foot in Latin and Greek poetry, consisting of a long syllable followed by two short ones; as *dominus, carmine.* When combined with the foot called a spondee, consisting of two long syllables, it forms a line of hexameter, or six feet poetry, in which the dactyls and spondees are tastefully intermingled.

DACTYLI, in antiquity, a name attributed to the first priests of the goddess Cybele, who were particularly called *Dactyli Idæi,* because she was principally honoured on mount Ida in Phrygia.

DACTYLIOMA'NCY, a kind of divination among the Greeks and Romans, which was performed by suspending a ring by a thread over a table, the edge of which was marked with the letters of the alphabet. As the ring, after its vibration ceased, happened to hang over certain letters, these joined together gave the answer.

DACTYLIOTHE'CA, a collection of engraved gems.

DAC'TYLIS, a genus of plants in the Linnæan system, class 3 *Triandria,* order 2 *Digynia.* Natural order of Grasses.—— *Dactylis* is also the botanic name for the date raisin.

DACTYLOL'OGY, or DACTYLON'OMY, the art of communicating ideas or thoughts by the fingers; or the art of numbering on the fingers.

DAC'TYLOS, the shortest measure among the Greeks, being the fourth part of a palm.

DA'DO, the die, or that part in the middle of the pedestal of a column between its base and cornice. It is also the name of the lower part of a wall.

DAD'DOCK, in botany, the heart of a tree thoroughly decayed.

DADU'CHI, priests of Ceres, who at the feasts and sacrifices of that goddess, ran about the temple with lighted torches, delivering them from hand to hand, till they had passed through the whole company.

DÆD'ALA, two festivals in Bœotia. One was held by the Platæans in a large grove, where they exposed to the air pieces of boiled flesh; and observing on what trees the crows alighted, that came to feed upon them, they cut them down and formed them into statues called *Dædala.* The other festival, which was much more solemn, was observed in different parts of Bœotia once in sixty years, when they carried about the statue of a female, called Dædala, and every city and every man of fortune offered a bull to Jupiter, and an ox or heifer to Juno, the poorer people providing sheep. These, with wine and incense, were laid upon the altar, and, together with twelve statues which were piled thereon, were set on fire and wholly consumed.

DÆMONOMA'NIA, in the medical writings of the ancients, denoted a madness which was supposed to arise from demoniacal influence.

DAF'FODIL, in botany, a species of the Narcissus.

DAGUERREOTYPE. Under the head "Photogenic Drawing," will be found some account of that singular invention; and as the art, now in its infancy, is attracting great attention, and much rivalry appears to exist between the inventors, we think it not amiss to insert the following account of M. Daguerre's process, as we find it:—"Mr. St. Croix, who has but recently arrived from Paris, has taken up his residence at No. 7, Piccadilly, where, on Friday last, he made some very interesting experiments with his new apparatus for transferring and securing the shadows of real objects on plates of silvered copper. This invention has made a good deal of noise at Paris, and the exhibition of the process by which the results are obtained was hailed by the scientific men of this country with great delight. We can say that the experiments were completely successful, and surpassed the expectations of those who witnessed them. Most persons are acquainted with the manner in which photogenic impressions are taken; we shall not, therefore, again describe it, but shall say that the Daguerreotypic impressions are

THE NAME OF "DEDALI" IS GIVEN TO FULL-LENGTH FIGURES, OR IMAGES, WITH THE FEET PLACED IN AN ADVANCING POSTURE.

infinitely beyond them. The Daguerreotypic drawings, or prints, or impressions, for we hardly know by which term to call them, are produced by the box or machine used in the exhibition of the camera obscura. The rays of light are collected into a focus, and brought to bear upon the substance upon which the desired representation is to be secured. In photogenic impressions this subject is prepared paper. In Daguerreotypic impressions it is a thin plate of copper, covered with a very thin lamina of steel, made to adhere to it by what is called technically 'dry rolling,' or compression. The surface of the silver is polished as bright as a mirror, and before being used the plate is heated to a slight degree, by a lamp, containing spirits of wine, being placed beneath it. This heating causes a voltaic action on the metals. The plate after cooling is rubbed with a preparation of sulphur, and polished very finely by pounce, triturated to an impalpable powder. The plate is then placed in a sort of box closely shut up, in which it undergoes a sort of fumigation from the vapour of iodine, during which operation, in length about twenty minutes, the room is darkened, and all rays of light carefully excluded. The plate being judged sufficiently prepared, is placed in the machine of the camera obscura, and retained there about the space of twenty minutes, at the expiration of which time on being removed, it presents no vestige of a picture, but appears bright, clear, and colourless. In this state it is placed in a box, having on one side a glass through which it may be seen. The box is fumigated with the vapour of mercury, to a heat of eighty-five degrees of the centigrade thermometer, commencing at forty-five degrees. After remaining in this box about ten or twelve minutes, the outline of a picture is perceivable through the glass; the details gradually develope themselves, and by twenty minutes a very beautiful representation is produced, in which there is a slight, certainly a slight, but yet obvious tint of colour. This representation is most accurat , and minute in every respect, and is an extraordinary miniature view of the large objects in actual existence. The plate is then washed with a slight chemical acid, and the process is perfected. The view taken on Friday was from the window of the residence of M. St. Croix; it was the south-western crescent of Regent-street; nothing could be more accurate. This invention has no quackery or secret whatever about it; we have described it as it appeared to us, but we have unavoidably omitted some of the details of the solutions applied to the plate; the whole operation requires little more than an hour. The plates employed were of French manufacture, and vastly inferior to what are made in England — they were what are called by the manufacturers 'puckered.' The invention will be of great use to engravers, as an engraving can at once be made on the plate, by passing the graver over the lines of the impression. It will be of great use to tourists and travellers in taking views of ancient buildings, ruins, &c., as the whole process is merely mechanical, and can be gone through without any chance of failure, by a person wholly ignorant of drawing, or the art of design."—[See PHOTOGENIC DRAWING.]

DAH'LIA, the name of a genus of plants belonging to the natural order *Compositæ*, or compound flowers. It is a native of South America, but has of late years become common in our gardens; and is highly ornamental in the autumnal season, when other flowers are scarce. The root is perennial, composed of fascicles of tubes; the stem is straight, branching, and often upwards of six feet in height; the flowers are solitary, at the extremity of long branches, and by cultivation have been doubled, and made to assume a variety of colours. It is reproduced from the seed, or by the division of the roots, which is the most approved mode; and it requires frequent watering. In autumn the roots should be taken up, covered with dry sand, and kept out of the reach of the frost during the winter. The roots furnish the Mexicans with a wholesome article of food, though the taste is by no means pleasant.

DA'IRY, a building appropriated to the purpose of preserving and managing milk, making butter, cheese, &c. Temperature in a dairy is of the first importance; for if too much heat be admitted, the milk will quickly become sour; and if too cold an atmosphere prevails, neither butter nor cheese making can be carried on with any success. Dairy farms, in general, consist chiefly of meadow and pasture, with only a small portion of the land under tillage; but it has of late years been proved that stall-feeding, with green crops, is most important in the management of cows; for in this way they can be kept in milk through the whole winter season.

DAIS, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*. The species are all deciduous shrubs.

DA'ISY, in botany, a plant of the genus *Bellis*, of several varieties.

DA'GON, an idol of the Philistines, of the human shape upwards, and resembling a fish downwards, with a finny tail.

DA'KER-HEN, a fowl of the gallinaceous kind, somewhat resembling a partridge or quail. Some say it is the same as the land-rail.

DAM'AGE-FEAS'ANT, in law, is when one person's beasts get into another's ground, without licence of the owner or occupier of the ground, and do damage by feeding, or otherwise, to the grass, corn, wood, &c. in which case the party injured may distrain or impound them.

DAM'AGES, in law, the estimated equivalent for an injury sustained; or that which is given or adjudged by a jury to the plaintiff in an action, to repair his loss.

DAM'ASCENE (pronounced *dam'son*), a fruit tree, bearing a small plum, of an oval shape; the *Prunus Damascena*.

DAM'ASK, a silk stuff with a raised pat-

A PECULIAR ORE OF SILVER WAS DISCOVERED IN 1566, CALLED "ARGENT CORNE," WHICH BECAME BLACK ON EXPOSURE TO THE LIGHT.

THE GREATEST DAIRY FARMS IN ENGLAND ARE IN CHESHIRE, GLOUCESTERSHIRE, ESSEX, CAMBRIDGE, SUFFOLK, DORSET, AND SOMERSET.

tern, consisting of figures and flowers; originally from Damascus. Though at first it was made only of silk, other materials are now used, as, for example, damask table-cloth.——*Damask-steel*, is a fine kind of steel from the Levant, used for sword and cutlas blades.

DAMASKEEN'ING, the art of engraving on and inlaying iron or steel with gold or silver wire.

DAME, formerly a title of honour to a woman. It is now seldom otherwise applied than to a mistress of a family in the humbler walks of life.

DAME-WORT, or DAME'S VIOLET, in botany, a plant of the genus *Hesperis*; called also queen's gilly-flower, or rocket.

DAM'NIFY, in law, to cause hurt or damage to; as, to *damnify* a man in his goods or estate.

DAMPS, noxious steams and exhalations, frequently found in mines, coal-pits, wells, and other subterraneous places; and which are deleterious or fatal to animal life. These damps are usually the carbonic acid gas, vulgarly called *choke-damp*, which instantly suffocates; or some inflammable gas, called *fire-damp*. The fire-damp, which prevails almost exclusively in coal-mines, is a mixture of light carburetted hydrogen and atmospheric air, which explodes with tremendous violence whenever it comes in contact with flame. The injuries which formerly occurred so frequently, both to the machinery and to the lives of the miners, arising from the fire-damp, are now almost completely obviated by the invention of Sir Humphry Davy's safety-lamp, which consists of a cylinder of wire gauze, about four inches in diameter and one foot in length, having a double top, securely fastened by doubling over to a brass rim, which screws on to the lamp itself below. When the lamp is lighted, it affords the miner all the light he requires, and renders him perfectly secure, even though entirely enveloped with the explosive mixture, which, with an ordinary light, would immediately prove fatal.

DAMP'ERS, in music, certain parts in the internal construction of the pianoforte, which are covered with soft leather in order to deaden the vibration, and are acted on by a pedal.

DAM'SEL (from the French *damoiselle*), a name anciently given to young ladies of noble or genteel extraction. The word is, however, now seldom used, except jocularly or in poetry.——*Damoisel*, or *damoiseau*, the masculine of the same word, appears to have been applied to young men of rank; thus we read of *damsel* Pepin, *damsel* Louis le gros, *damsel* Richard, prince of Wales. From the sons of kings this appellation first passed to those of great lords or barons, and afterwards to those of gentlemen, who were not yet knights; but, such is the change which language undergoes, that at the present day it is only used (and then rarely) when speaking of young unmarried women. It occurs frequently in the Scriptures, and in poetry.

DAN'CING, a lively brisk exercise, or agreeable motion of the body, adjusted by art to the measures or tune of instruments. Dancing has been practised by all nations civilized and barbarous; by some held in esteem, by others in contempt. It has also often been made an act of religion: thus David danced before the ark, to honour God, and express his excess of joy for its return into Sion; and among the pagans it made a part of the worship paid to the gods, it being usual to dance round the altars and statues. As an exercise, or amusement, dancing is nothing more than a methodized act instinctive in the human frame. To teach dancing, is to teach the activity of the body to display itself in a manner regulated by the principles of grace, or in imitation of steps and gestures which others have used with approbation. By its mechanical effects on the body, it inspires the mind with cheerfulness; while the music which accompanies it has effects upon the body as well as upon the mind.

DANCETTE, in heraldry, is when the outline of any bordure or ordinary is very largely indented.

DAN'DY, (from *dandiprat*, a little urchin, or probably from the French *dandin*, a ninny;) a male of the human species, whose foppery in dress and manners renders him a bitter satire on "the human form divine."

DA'NEGELT, an annual tax formerly laid on the English nation, for maintaining forces to oppose the Danes, or to furnish tribute to procure peace with them. It was first imposed as a continual yearly tax upon the whole nation, under king Ethelred. It was levied by William I. and II. but was released by Henry the First; and finally abolished by Stephen.

DANGE'RIA, in our old law, a payment of money anciently made by the forest tenants to their lords, that they might have leave to plough and sow in the time of pannage or mast-feeding.

DA'OURITE, a mineral called also *rubellite*, resembling shorl, and of a reddish hue.

DAPH'NE, in botany, a genus of plants, class 8 *Octandria*, order 1 *Monogynia*. The species are all shrubs; as *Daphne mezereon*, *Daphne laureola*, &c.

DAPHNEPHO'RIA, in antiquity, a novennial festival celebrated by the Bœotians in honour of Apollo, to whom boughs of laurel were offered.

DAPH'NIN, in chemistry, the bitter principle of the *Daphne Alpina*, discovered by Vauquelin. It consists of hard crystals, which are of a grayish colour and transparent.

DAP'PLED, variegated with spots of different colours; as, a *dapple-bay* or *dapple-gray* horse.

DARAP'TI, in logic, an arbitrary term expressing the first mood of the third figure of syllogisms, where the first two propositions are universal affirmatives, and the last a particular affirmative.

DA'RIC, in antiquity, a Persian gold coin, said to have been struck by Darius, and supposed to have been equal to 25*s.* sterling.

DA'TA, among mathematicians, a term used for such things and quantities as are given or known, in order to find other things therefrom, that are unknown. Euclid uses the word for such spaces, lines, and angles, as are of a given magnitude, or to which we can assign others equal.

DATE, that part of a writing or letter which expresses the day of the month and year.——*Date*, in law, is the description of the day, month, or year of our Lord; with the year of the reign of the king, in which a deed or other writing was executed.—— An *ante-date* is a date prior to the real time when the instrument was signed. A *post-date* is that posterior to the real time.

DA'TE-TREE, in botany, the *Phœnix dactytifera*, a species of palm which flourishes in North Africa and Western Asia, growing fifty, sixty, and sometimes one hundred feet high; distinguishing the landscape of those countries, and affording the inhabitants food, clothing, &c. The fruit is pulpy, firm, sweet, and esculent; and in it is enclosed a hard kernel.

DATH'OLITE, in mineralogy, the borate of lime, of which there are two sub-species, the common and the botryoidal.

DA'TISI, in logic, an arbitrary term for a mode of syllogisms in the third figure, wherein the major proposition is a universal affirmative, and the minor and conclusion are particular affirmatives.

DA'TIVE, in grammar, the third of the Greek and Latin nouns.

DATU'RA, in chemistry, a vegetable alkali obtained from *Datura stramonium*. ——Also, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*.

DAU'CUS, the Carrot, a well-known vegetable. Also, a genus of plants, class 5 *Pentandria*, order 2 *Digynia:* the species are biennials or annuals.

DAU'PHIN, the title of the eldest son of the king of France. It is said that, in 1349, Humbert II., the last of the princes of Dauphiny, having no issue, gave his dominions to the crown of France, upon condition that the king's eldest son should be styled the *Dauphin*.

DAVID'S-DAY, (St.) the 1st of March, kept by the Welsh in honour of St. David, bishop of Minev, in Wales; who at the head of their forces obtained a signal victory over the Saxons. It is the invariable custom of the Welsh to wear leeks in their hats on this day.

DAWN, the commencement of the day, when the twilight appears.

DAY, according to the most natural and obvious sense of the word, signifies that part of the twenty-four hours when it is light; or the space of time between the rising and the setting of the sun; the time which elapses from its setting to its rising again being considered the night. The word day is often taken in a larger sense, so as to include the night also; or to denote the time of a whole apparent revolution of the sun round the earth. The day is also distinguished into *civil* and *astronomical*. The civil day is a space of twenty-four hours, reckoned from sunset to sunset, or from sunrise to sunrise, which is different in different parts of the globe. The astronomical day is the space of twenty-four hours, reckoned from twelve o'clock at noon to the noon of the next day.——The *nautical day* ends at the instant the astronomical day begins; so that nautical time in days of the month, is always twenty-four hours in advance of astronomical time, and the civil day is midway between both.——The Babylonians began the day at sun-rising; the Jews at sun-setting; the Egyptians at midnight, as do several nations in modern times, the British, French, Spanish, American, &c.——*Days of grace*, in commerce, a customary number of days allowed for the payment of a bill after it becomes due. *Three* days of grace are allowed in Great Britain and America. In other countries the time allowed is much longer, but the merchants there very rarely avail themselves of the time.

DAY'-FLY, in entomology, the *Ephemera* of Linnæus; an insect, so called from the shortness of its existence, which rarely exceeds a day.

DAY'-LILY, in botany, the *Hemerocallis* of Linnæus; a plant so called because the beauty of its flower seldom lasts longer than one day.

DAY'COAL, a name given by miners to the upper stratum of coal.

DAY'-WRIT, or DAY'-RULE, in law, a rule or order in court permitting a prisoner in the Queen's Bench to go beyond the bounds of the prison for one day.

DAZE, in mineralogy, a kind of glittering stones, found in tin and lead mines.

DE'ACON, the lowest of the three orders of clergy (deacons, priests, and bishops) in the English church. The word is sometimes used in the New Testament for any one that ministers in the service of God; in which sense, bishops and presbyters are styled deacons: but, in its restrained sense, it is taken for the third order of the clergy. In the church of England, the form of ordaining a deacon declares that it is his office to assist in the distribution of the holy communion; in which, agreeably to the practice of the ancient church, he is confined to the administration of the wine to the communicants. A deacon is not capable of any ecclesiastical promotion; yet he may be chaplain to a family, curate to a beneficed clergyman, or lecturer to a parish church. ——In the Romish church, the deacon's office is to incense the officiating priest, to incense the choir, to put the mitre on the bishop's head at the pontifical mass, and to assist at the communion.——In Presbyterian and Independent places of worship, the deacons distribute the bread and wine to the communicants.——In Scotland, an overseer of the poor, or the master of an incorporated company, is styled a *deacon*.

DE'ACONESS, a female deacon in the primitive church. This office appears as ancient as the apostolical age; for St. Paul calls Phœbe a servant of the church of

IN SOME COUNTRIES, THE STONES OF DATES ARE GROUND TO MAKE OIL, AND THE PASTE OR CAKE IS GIVEN AS FOOD TO CATTLE.

OUR NAMES OF THE DAYS OF THE WEEK WERE INTRODUCED BY THE SAXONS, WHO DERIVED THEM FROM THE SCANDINAVIAN MYTHOLOGY.

Cenchrea. One part of their office was to assist the minister at the baptizing of women, to undress them for immersion, and to dress them again, that the whole ceremony might be performed with all the decency becoming so sacred an action.

DEAD LANGUAGE, a language which is no longer spoken or in common use by a people, and known only in writings; as the Hebrew, Greek, and Latin.

DEAD'-LIGHTS, strong wooden ports, made to suit the cabin windows, in which they are fixed, to prevent the water from entering the ship in a storm.

DEAD-EYES, in sea-language, a kind of blocks with many holes in them, whereby the shrouds are fastened to the chains.

DEAD-RECKONING, in navigation, the difference between the place of a ship by the log and by astronomical observation, owing to currents, &c.

DEAD'-WATER, the eddy water closing in with a ship's stern as she passes through the water.

DEAD'-WORKS, the parts of a ship which are above the surface of the water, when she is balanced for a voyage.

DEAF'NESS, or the want of the sense of hearing, generally arises either from an obstruction or depression of the auditory nerve; or from some collection of matter in the cavities of the inner ear; or from the auditory passage being stopped up by hardened excretions; or lastly, from some excrescence, or swelling of the glands, or some foreign body introduced. It occurs in every degree, from that which merely impairs the accuracy of the ear in distinguishing faint sounds, to that state in which there is no more sensation in this organ than in any other; and sound is felt in almost every other part of the body, as a mere vibration. Deafness, in every degree, affects the distinctness of articulation, and if it is so great that the person can no longer distinguish between articulate sounds, he is incapable of acquiring speech in the ordinary manner, and becomes dumb in consequence of his deafness. Much has been done since the beginning of the present century to alleviate this dire misfortune by the establishment of institutions for the instruction of the deaf and dumb. "It appears," says a writer in the Conversations Lexicon, "that there are now eighty-one establishments for deaf mutes in Europe; of which Spain has one, Portugal one, Italy six, Switzerland four, Baden four, Wurtemburg three, Bavaria one, Prussia eight, the rest of Germany ten, Denmark two, Sweden one, Russia one, Holland four, Great Britain ten, and France twenty-six."

DEAL, fir-planks of different thicknesses, brought from the Baltic, and much used in carpentry.

DEAN, a dignitary of the church of England, next to a bishop, and head of the chapter, in a cathedral or council.——*Dean and Chapter*, are the bishop's council to assist him with their advice in the affairs of religion, and in the temporal concerns of his see.

DEATH, a total and permanent cessation of all the vital functions, when the organs have not only ceased to act, but have lost the susceptibility of renewed action. "Men," says Lord Bacon, "fear death, as children fear the dark; and as that natural fear in children is increased by frightful tales, so is the other. Groans, convulsions, weeping friends, and the like, show death terrible; yet there is no passion so weak but conquers the fear of it, and therefore death is not such a terrible enemy; revenge triumphs over death; love slights it; dread of shame prefers it; grief flies to it; and fear anticipates it." A happy life is, indeed, desirable; for life *is;* but death *is not*. To talk of death, is to give a name to nothing. To part with life, is to part with that of which we can never regret the loss. The alarms most prevalent among mankind seem to arise from two considerations, viz. the supposed corporeal suffering attending it; and the state that is to succeed it. With respect to the supposed corporeal suffering, it may be observed, that death is a mere passive extinction of the vital fire, unattended with any exertion of the animal functions, and therefore wholly free from pain. The agonies and sufferings incident to sickness or wounds, are the agonies and sufferings of life, not of death; they are the struggles of the body to live, not to die; efforts of the machine to overcome the obstacles by which its functions are impeded. But when the moment of dissolution arrives, all sense of suffering is subdued by an instantaneous stoppage of life, or by a languid insensible fainting.——In law, there is a natural death and a civil death: *natural*, where actual death takes place; *civil*, where a person is not actually dead, but adjudged so by law; as by banishment, abjuration of the realm, &c.

DEATH'-WATCH, a little insect, which inhabits old wooden furniture, and is famous for striking with its head against paper or some other material, and thereby making a ticking noise, like the beat of a watch, which by ignorant and superstitious people is supposed to be a presage of death. This insect is a small beetle, 5-16ths of an inch long, of a dark brown colour, spotted; having transparent wings under the vagina, or hard case, belonging to the beetle tribe; a large cap or helmet on its head, and two antennæ proceeding from beneath the eyes, and doing the office of proboscides. It is now pretty well ascertained that this ticking is merely the mode of call which the male insect makes for its mate.

DEBATE, oral contention by argument and reasoning; or a controversy between parties of different opinions, professedly for elucidating the truth.——*Debates in Parliament*, the published report of arguments for and against a measure, in either house of parliament.

DEBEN'TURE, a term used at the custom-house for a certificate signed by an officer of the customs, which entitles a merchant exporting goods to the receipt of a bounty, or a drawback of duties.——It

THE BENEVOLENT DE L'EPEE DEVOTED HIS FORTUNE AND HIS LIFE TO THE GRATUITOUS INSTRUCTION OF THE DEAF AND DUMB.
THE SYSTEM OF DE L'EPEE WAS MATERIALLY IMPROVED BY SICARD, HIS PUPIL AND SUCCESSOR IN THE PARIS INSTITUTION.

FOR EVERY CREDITOR THERE MUST BE A DEBTOR, AND FOR ALL OSTENTATIOUS EXPENDITURE, THERE MUST BE EQUIVALENT PRIVATION.

IF THE DIVISIONS OF MONEY AND MEASURES BE IN A DECIMAL RATIO, THE EASE OF CALCULATION IS VERY GREATLY INCREASED.

also denotes a sort of bill drawn upon the government.

DEB'IT, a term used in book-keeping to express the left hand page of the ledger, to which all articles are carried that are charged to an account.

DEBOUCH', in military language, to issue or march out of a narrow place, or from defiles.

DEBRIS (pron. *debree'*) ruins or rubbish; applied particularly to the fragments of rocks.——The word *debris* is also used by the French to express the remains or wreck of an army that has been routed.

DEBOU'CHEMENT, a French term for the marching of an army from a narrow place into one that is more open.

DEBT, in law, that which is due from one person to another, whether it be money, goods, or services.——In law, used elliptically for an action to recover a debt.——In scripture, sin; that which renders liable to punishment; as, "forgive us our *debts*."——*National Debt*, the engagement entered into by a government to repay at a future period money advanced by individuals for public service, or to pay the lenders an equivalent annuity.

DEC'ACHORD, or DECACHORD'ON, a musical instrument of ten strings.

DEC'AGON, in geometry, a plane figure with ten sides and ten angles.

DEC'AGRAM, a French weight of ten grams, or 154 grains, 44 decimals.

DEC'AGYN, in botany, a plant having ten pistils.

DECAHE'DRON, in geometry, a figure or body having ten sides.

DEC'ALITER, a French measure of capacity, containing ten liters, or 610,28 cubic inches.

DEC'ALOGUE, the ten commandments or precepts delivered by God to Moses, at Mount Sinai, originally engraved on two tables of stone. The Jews, by way of excellence, call these commandments The Ten Words, whence they afterwards received the name of *decalogue*.

DECAM'ERON, a work containing the actions or conversations of ten days. Boccacio's Decameron consists of one hundred tales related in ten days.

DECAM'ETER, a French measure of length, consisting of ten meters, and equal to 393 English inches, and 71 decimals.

DECAPH'YLLOUS, in botany, an epithet for plants having ten leaves.

DEC'ASTICK, a poem consisting of ten lines.

DEC'ASTYLE, in architecture, a building with an ordnance of ten columns in front.

DECEMDEN'TATE, having ten points or teeth.

DECEMLOC'ULAR, in botany, having ten cells for seeds.

DECEM'BER, the last month of the modern year, consisting of thirty-one days; when the sun enters the tropic of Capricorn, and makes the winter solstice. It was so called from being the tenth month in the Roman year, which began with March.

DECEM'VIRI, ten magistrates elected by the Roman people, and invested with the power of administering the laws of the twelve tables, which were compiled at the time of their creation. The *decemviri* were introduced by the popular power to counteract the privileges of the patricians; but their misbehaviour caused the same power to procure their abolishment in the third year of their *decemvirate*.

DECAN'DRIA, the tenth class of the Linnæan system of plants, containing six classes, *Monogynia, Digynia, Trigynia, Tetragynia, Pentagynia*, and *Decagynia*, with ten stamens.

DEC'ENNARY, in law, a tithing consisting of ten freeholders and their families. Ten of these decennaries constituted a *hundred*, the origin of which is ascribed to Alfred.

DE'CEM PRI'MI, or DE'CEM PRIN'CIPES, in Roman antiquity, the ten chief men or senators of every city or borough.

DECI'DENCE, in medicine a decay or tendency to any disease.

DECID'UOUS, an epithet chiefly used in botany; as, *deciduous leaves*, those which fall in autumn, in distinction to those of evergreens. The calyx or cup of a flower is also said to be *deciduous* when it falls, or decays, along with the flower-petals, while on the contrary, it is called *permanent* when it remains after these are fallen.

DEC'IGRAM, a French weight of one-tenth of a grain.

DEC'ILITER, a French measure of capacity, equal to one-tenth of a liter.

DECIM'ETER, a French measure of length, equal to the tenth part of a meter.

DE"CIMAL ARITH'METIC a kind of calculation in which no other fractions are used than tenths, hundredths, &c. which are consequently called *decimal fractions*, and afford great facilities in calculation.

DECIMA'TION, a punishment inflicted by the Romans on such soldiers as quitted their post, or behaved themselves ill in the field. The names of all the guilty were put into an urn or helmet, from which a tenth part only were drawn, whose lot it was to suffer death.

DECK, the planked floor of a ship from stem to stern. Small vessels have only one deck; larger ships have two or three decks. Thus, speaking of the size of a large ship, we say, she is a *two-decker*, or a *three-decker*.

DECK'ED, in heraldry, a term applied to an eagle, or other birds, when their feathers are trimmed at the edges with a small line of another colour.

DECLAMA'TION, the act of speaking to a public audience with energy and grace; and may be either a discourse addressed to the reason or to the passions. Among the Greeks, declamation was the art of speaking indifferently on all subjects, and on all sides of a question. With us it is more especially applied to the speeches of students in colleges, practised for exercises in oratory. The term is, however, often used contemptuously, to denote a noisy harangue;

as *mere declamation*, by which is meant, that a very strong appeal to the passions may be wholly deficient in basis, and may gain the assent of the feelings without offering a single argument that is worthy of the understanding.

DECLARA'TION, in law, that part of the process or pleadings in which a statement of the plaintiff's complaint against the defendant is set forth.——*Declaration of war*, a public proclamation made by a herald at arms to the subjects of a state, declaring them to be at war with some foreign power, and forbidding all and every one to aid or assist the common enemy at their peril.

DECLEN'SION, in grammar, the inflection of cases to which nouns are subject. Also, the act of going through these inflections.

DECLINA'TION, in astronomy, is the distance of any star or point of the heavens from the equator, either north or south. When the sun is in the equinoctial, he has no declination, and enlightens half the globe from pole to pole. As he increases in north declination, he gradually shines farther over the north pole, and leaves the south pole in darkness; and *vice versâ*. The sun's greatest declination, north or south, is 23 degrees and a half.——*Declination of the compass*, is the variation of the needle from the true meridian of a place.

DECLI'NATORY PLEA, in law, a plea before trial or conviction, intended to show that the party was not liable to the penalty of the law, or was specially exempted from the jurisdiction of the court.

DECOC'TION, a medicinal liquor; made by extracting the soluble and efficacious part of many drugs, particularly of barks, woods, seeds, roots, &c.

DECOLLA'TIO, in surgery, the loss of a part of the skull; from *decollo*, to behead.

DECOLLA'TION, the act of beheading, a term frequently used in the phrase "decollation of St. John the Baptist."

DE'COMPOUND, in botany, an epithet for a leaf, an umbel, and a flower. A decompound leaf is one which has its primary leaf so divided that each part forms a compound leaf. A decompound flower *(flos decompositus)*, is one which contains within a common calyx smaller calyces.

DECOMPOSI''TION, in chemistry, the act of separating the constituent parts of a substance. It differs from mechanical division, as the latter effects no change in the properties of the body divided, whereas the parts chemically decomposed have properties very different from those of the substance itself.

DECO'RUM, in architecture, the suitableness of a building, and of its parts and ornaments, to their respective places and uses.

DECOY', in a general sense, any lure that deceives and misleads. Also, a sea term, for a stratagem employed by ships of war, to draw any vessel of inferior force into an incautious pursuit, until she comes within gun-shot. Decoying is also performed to elude the chase of a ship of superior force in a dark night; and this is done by committing to the sea a lighted cask of pitch, which will burn for a considerable time, and misguide the enemy. As soon as the cask is lowered, the ship changes her course, and thus, if at any tolerable distance from the foe, escapes with facility.——*Decoy*, among sportsmen, a place for catching wild fowl.——*Decoy-duck* a wild duck trained to decoy others into the decoy or place where they may be caught.

DEC'REMENTS, in physics, the small parts by which a variable and decreasing quantity becomes less and less.——Decrement *equal of life*, is a term in the doctrines of annuities, signifying that out of a certain number of lives there should be an equal number decrease within a given period of years.

DECRÉE', the order of an authoritative power. In England, the sentence of the judges in the civil courts, and in chancery, is called a decree. In theology, the predetermined purpose of God, whose plan of operations is, like himself, unchangeable.

DECREET', in the Scotch law, a final decree of judgment of the lords of session, from which an appeal only lies to parliament.

DECREPITATION, in chemistry, a term applied to the crackling noise of salts when exposed to heat, by which they are quickly split. It takes place in those salts that have little water of crystalization, the increased temperature converting that small quantity into vapour, by which the crystals are suddenly burst. Common salt affords a good example of decrepitation, and when used as a flux should be previously decrepitated.

DECRESCEN'DO in music, the term for gradually decreasing or weakening the sound; as opposed to *crescendo*.

DECRES'CENT, in heraldry, a term denoting the state of the moon when she declines from the full to her last quarter, when the horns are turned to the sinister side of the escutcheon.

DECRE'TAL, a letter from the pope, determining some point or question in ecclesiastical polity. The *decretals* form the second part of the canon law.

DECUMB'ENT, in botany, an epithet for a flower having its stamens and pistils bending down to the lower side of it.

DECUM'BITURE, in astrology, the scheme or aspect of the heavens, by which the prognostics of recovery or death are discovered.

DECUR'RENT, an epithet for a leaf, which adheres immediately to the stalk of a plant, without any pedicle, and which has its lower part extended along the branch.

DECU'RIO, in Roman antiquity, a company of ten men under one officer or leader, who was called a *decurion*, their cavalry being divided into centuries, and the centuries subdivided into ten *decuriæ* each.

DECU'RIO'NES MUNICIPA'LES, a court of judges or counsellors representing the Roman senate in the free towns and provinces.

A DEVICE FOR MAKE FORM OF WOODEN TUBE, OR PIECE OF WATER, SURROUNDED WITH WOOD.

IN THE OLD GERMAN EMPIRE, THE RESOLUTIONS OF THE EMPEROR, DECLARED TO THE ESTATES OF THE EMPIRE, WERE CALLED DECREES.

THE FORMAL PARTS OF A DEED ARE THE PREMISES, THE COVENANTS, AND THE CONCLUSION WHICH MENTIONS THE EXECUTION AND DATE.

DECUSSA'TION, a term in geometry, optics and anatomy, signifying the crossing of any two lines, rays, or nerves, when they meet in a point, and then go on separately from one another.

DECUS'SATE, or DECUS'SATED, in botany, an epithet for such leaves and branches as grow in pairs which alternately cross each other at right angles, or in a regular manner.——In rhetoric, a *decussated* period is one that consists of two rising and two falling clauses, placed in alternate opposition to each other.

DED'ALOUS, a botanical term applied to leaves of a delicate texture, whose margin is marked by various windings and turnings.

DEDICA'TION, the act of consecrating, or solemnly devoting, any person or thing, to the service of God, and the purposes of religion.——*Feast of Dedication*, an anniversary festival among the Jews, in memory of Judas Maccabæus, who repaired and dedicated anew the temple and altar, which had been plundered and profaned by Antiochus Epiphanes. It was observed on the twenty-fifth of Cisleu, and continued eight days.

DEDUC'TOR, a client amongst the Romans, who called upon his patron at his lodgings in the morning, waited upon him from thence to the forum, and attended him upon all public occasions.

DEED, in law, a written contract, sealed and delivered. It must be written before the sealing and delivery, otherwise it is no deed; and after it is once formally executed by the parties, nothing can be added or interlined; and, therefore, if a deed be sealed and delivered with a blank left for the sum, which the obligee fills up after sealing and delivery, this will make the deed void. Every deed must be founded upon good and sufficient consideration; not upon an usurious contract, nor upon fraud or collusion, either to deceive *bonâ fide* purchasers, or just and lawful creditors; any of which considerations will vacate the deed. It takes effect only from the day of delivery; and, therefore, if a deed have no date, or a date impossible, the delivery will in all cases ascertain the date of it. The delivery of a deed may be alleged at any time after the deed; but unless it be sealed and regularly delivered, it is no deed. And lastly, it must be properly witnessed or attested; which, however, is necessary rather for preserving the evidence, than as intrinsically essential to the validity of the instrument.

DE FAC'TO, in law, something actually in fact, or existing, in contradistinction to *de jure*, where a thing is only so in justice, but not in fact; as a king *de facto* is a person that is in actual possession of a crown, but has no legal right to the same; and a king *de jure* is the person who has a just right to the crown, though he is not in possession of it.

DEFAMA'TION, the malicious uttering of falsehood with a view to injure another's reputation. Defamatory words written and published constitute a *libel*.

DEFAULT', in law, a non-appearance in court without assigning sufficient cause. ——*Defaul'ter*, one who fails to account for public money entrusted to his care.

DEFE'ASANCE, in law, a condition relating to a deed, which being performed, the deed is defeated and rendered void. A *defeasance*, or a bond, or a recognizance, or a judgment recovered, is a condition which, when performed, *defeats* it.

DEFECA'TION, the act of separating from lees or dregs.

DEFEN'CE in law, the reply which the defendant makes after the declaration is produced.——In military affairs, any work that covers or defends the opposite posts, as flanks, parapets, &c.

DEFEND'ANT, in law, the party that is summoned into court, and *defends*, denies, or opposes the demand or charge, and maintains his own right. It is applied whether the person defends, or admits the claim and suffers a default.

DEFI'LE, a narrow way, or pass, through which a company of soldiers can march only in file.

DEFINI'TION, the determining the nature of things by words; or a brief description of a thing by its properties. It is generally effected by adding to a generic word the essential and peculiar qualities or circumstances of the thing to be defined; but a strictly accurate definition cannot always be given; and the most simple things are generally the least capable of definition, from the difficulty of finding terms more simple and intelligible than the one to be defined.

DEFIN'ITIVE, a term applied to whatever terminates a process, question, &c. in opposition to provisional and interlocutory. ——In grammar, a word used to define or limit the extent of the signification of an appellative or common noun.

DEFLAGRA'TION, rapid combustion, or the act of burning two or more substances together, as charcoal and nitre.

DEFLEX'ION, the turning anything out of its due course; as the tendency of a ship out of her due course by reason of currents, &c.——*Deflexion of the rays of light*, in optics, a property (called by Newton *inflection*) distinct from reflection and refraction, being made perpendicularly towards the opaque body.

DEFLEX'US, in botany, an epithet for a leaf when bowed or bent down like an arch.

DEFLORA'TUS, in botany, an epithet for a flower which has discharged its pollen.

DEFLU'VIUM, in botany, a disease in trees whereby they lose their bark.——*Defluvium capillorium*, in medicine, a preternatural falling off of the hair.

DEFLUX'ION, in surgery, the falling or flowing of humours from a superior to an inferior part of the body; as a defluxion from the nose or head in catarrh.

DEFOLIA'TION, the shedding of leaves; a term technically applied to the autumnal season, when the leaves of trees and shrubs are shed.

TO MARCH BEFORE ANY ONE WITH A NARROW FRONT, THAT IS "EN COLONNE," OR BY FILES, IS ALSO CALLED "DEFILING."

DEFO'RCEMENT, in law, the holding of lands or tenements to which another person has a right. In Scotland, it denotes a resisting of an officer in the execution of law.

DEGRADA'TION, in ecclesiastical affairs, the depriving a person of his dignity and degree; as the degradation of a clergyman by depriving him of holy orders.——In military affairs, the depriving an officer of his commission.——In painting, a lessening and obscuring of the appearance of distant objects in a landscape, that they may appear as they would do to an eye placed at a distance.

DEGRA'DED, in heraldry, an epithet in blazoning for a cross that has steps at each end.

DEGREE', in geometry, a division of a circle, including the 360th part of its circumference: every circle is supposed to be divided into three hundred and sixty parts, called degrees, and each degree divided into sixty other parts, called minutes; each of these minutes being again divided into sixty seconds, and each second into thirds, and each third into fourths, and so on.——*Degree*, in algebra, a term applied to equations, to distinguish the highest power of the unknown quantity.——*Degree*, in genealogy, an interval of relationship between persons more or less nearly allied.——The division, space, or interval, marked on a mathematical or other instrument; as, on a thermometer or barometer.

DEGREE', in universities, a mark of distinction conferred on the students or members thereof as a testimony of their proficiency in arts or sciences, and entitling them to certain privileges. This is usually evinced by a diploma. The first degree is that of *Bachelor of Arts*; the second, that of *Master of Arts*. Honorary degrees are those of *Doctor of Divinity, Doctor of Laws*, &c. Physicians also receive the degree of *Doctor of Medicine*.

DEGREES *of comparison*, in grammar, the inflections of adjectives which express different degrees of the same quality; as, *good, better, best*.

DEHIS'CENCE, and DEHIS'CENT, in botany, terms given to the opening of the capsules of a plant.

DE'ICIDE, a term only used for the condemnation and execution of the Saviour of the world, by Pontius Pilate and the Jews.

DEIFICA'TION, the act of deifying, or enrolling among the heathen deities.

DEIPNOSOPH'IST, one of an ancient sect of philosophers who were famous for their learned conversation at meals.

DE'ISTS, in the modern sense of the word, are those persons who acknowledge the existence of one God, but disbelieve in revealed religion. Taking the denomination in the most extensive signification, a learned theologian has thus divided deists into four classes. 1. Such as pretend to believe the existence of an eternal, infinite, independent, intelligent Being, and who teach that this supreme Being made the world, though they fancy he does not at all concern himself in the management of it. 2. Those who believe not only the being, but also the providence of God with respect to the natural world, but who not allowing any difference between moral good and evil, deny that God takes any notice of the morally good or evil actions of men; these things depending, as they imagine, on the arbitrary constitutions of human laws. 3. Those who having right apprehensions concerning the natural attributes of God, and his all-governing providence, and some notion of his moral perfections also; yet being prejudiced against the notion of the immortality of the human soul, believe that men perish entirely at death, and that one generation shall perpetually succeed another, without any future restoration or renovation of things. 4. Such as believe the existence of a supreme Being, together with his providence in the government of the world, as also the obligations of natural religion; but so far only, as these things are discoverable by the light of nature alone, without believing any divine revelation.

DEI JUDI'CIUM, the old Saxon trial by ordeal, so called because it was supposed to be an appeal to God.

DE'ITY, the nature and essence of the Supreme Being; a term frequently used in a synonymous sense with God.——Also, a fabulous god or goddess; as, Jupiter, Juno, Apollo, &c.

DELACRYMA'TION, a preternatural discharge of watery humours from the eyes.

DEL CRED'ERE, a term in commerce expressive of a guarantee given by factors, who for an additional premium warrant the solvency of the parties to whom they sell goods upon credit.

DEL'EGATE, a commissioner of appeal appointed by the king to hear appeal causes from the ecclesiastical court.——In the United States of America, a person elected or appointed to represent a state or district in the congress.

DELETE'RIOUS, an epithet for drugs or any substances of a destructive or poisonous quality.

DELF, a kind of potter's ware, originally made at Delft in Holland; it is covered with an enamel or white glazing, in imitation of porcelain.

DELIQUES'CENCE, in chemistry, spontaneous liquefaction in the air; a term applied to certain saline bodies that have become moist or liquid, by means of the water which they absorb from the atmosphere, in consequence of their great attraction to moisture.

DELIR'IUM, a state in which the ideas of a person are wild and irregular, or do not correspond with the truth, or with external objects. Or it may be defined symptomatic derangement, or that which is dependant on some other disease, in distinction from idiopathic derangement or *mania*.

DELIV'ERY, a part of oratory, referring to the management of the voice; as, he has a good or graceful *delivery*.

DEL'PHIC, or DEL'PHIAN, relating

THE FAMOUS DIVISION OF THE CIRCLE INTO 360 DEGREES CONTAINING 60 MINUTES, EACH MINUTE TO SECONDS, &C.

THE DIFFERENCE OF THE LONGITUDE OF TWO PLACES IS DETERMINED BY THE DIFFERENCE OF THE HOUR AT THE SAME POINT OF TIME.

to Delphi, and to the celebrated oracle there.

DELPH'INITE, a mineral called also *pistacite*.

DELPHIN'IUM, in botany, LARKSPUR, a genus of plants, class 12 *Polyandria*, order 3 *Trigynia*.

DELPHI'NUS, a genus of animals, class *Mammalia*, order *Cetæ*, consisting of the dolphin, the porpoise, and the sword grampus. The dolphin is described by the ancients as the swiftest of all animals either by land or sea, and, according to Aristotle, so agile in leaping, that it would clear ships.——*Delphinus*, in astronomy, is a constellation in the northern hemisphere; for among the fictions of the ancient poets, is one which states that the dolphin was translated to the celestial regions by Neptune.

DEL'TOID, in anatomy, a thick triangular muscle of the arm, being one of the three elevators.——Also, a term for any thing having three angles, of which the terminal one is much further from the base than the lateral ones.

DEL'UGE, an inundation or overflowing of the earth, either wholly or in part, by water.——We have several deluges recorded in history, as that of Ogyges, which overflowed almost all Attica, and that of Deucalion, which drowned all Thessaly, in Greece: but the most memorable was that called the universal deluge, or Noah's flood, from which only Noah and those with him in the ark, escaped. This flood makes one of the most considerable epochas in chronology. Its history is given by Moses in the book of Genesis, ch. vi. & vii. and its time is fixed to the year from the creation 1656. From this flood, the state of the world is divided into "diluvian" and "anti-diluvian."

DEMAIN', or DEME'SNE, in law, a manor-house and the lands thereunto belonging, which the lord of the manor and his ancestors have time out of mind kept in their own occupation. It denotes also all the parts of any manor not in the hands of freeholders; and is frequently used for a distinction between those lands that the lord has in his own hands, or in the hands of his lessee demised at a rack-rent; or such other land appertaining to the manor, which belongs to free or copyholders.

DEM'AGOGUE, any factious orator who acquires great influence with the populace; whom he flatters, cajoles, or leads into danger, as best suits his purpose.

DEMAND'ANT, in law, the pursuer in real actions, in distinction from the plaintiff.

DEMARCA'TION, LINE OF, every line drawn for determining a border, which is not to be passed by foreign powers, or by such as are at war with each other.

DEM'I, a half-fellow at Magdalen College, Oxford——Also, a term in composition, signifying half; as, *demigod*, a hero who was enrolled among the gods.

DEM'I-CADENCE, in music, an imperfect cadence, or one that falls on any other than the key note.

DEM I-CROSS, an instrument for taking the altitude of the sun and stars.

DEMI-CUL'VERIN, a piece of ordnance, the least of which is ten feet long, and carries a ball of nine pounds weight.

DEM'I-GORGE, in fortification, that part of the polygon which remains after the flank is raised, and goes from the curtain to the angle of the polygon.

DEM'I-QUAVER, a note in music, of half the length of the quaver.

DEM'I-VOLT, one of the seven artificial motions of a horse, in which he raises his fore-legs in a particular manner.

DEMI'SE, in law, is applied to an estate either in fee, for term of life or years, though most usually the latter.——The death of a king, or a queen regnant, is termed the demise of the crown, by which is implied a transfer of the royal authority or kingdom to a successor——*Demise and redemise*, a conveyance where there are mutual leases made from one to another of the same land, or something out of it.

DEMOC'RACY, a form of government, in which the supreme power is lodged in the hands of the people collectively, or in which the people exercise the powers of legislation.

DE'MON, or DÆ'MON, a name used by the ancients for certain supernatural beings, whose existence they supposed. They were spirits or genii who appeared to men, either to do them service or to hurt them. The Platonists distinguish between gods, demons, and heroes; the demons being those since called angels. Socrates and Tasso spoke, in very distant ages, of being each attended by a demon or familiar. In Tasso, this pretension has been referred to an hypochondriacal state of mind; in Socrates, the matter has given rise to much speculation. From the manner, however, in which the philosopher is said to have described his *demon*, there seems good reason to believe that he spoke figuratively of his natural conscience or intellect: "it directed him how to act in every important occasion of life, and restrained him from imprudence of conduct." The demons of the New Testament were supposed to be spiritual beings which vexed and tormented men. And in general, the word, in modern use, signifies an evil spirit or genius, which influences the conduct or directs the fortunes of mankind.

DEMO'NIAC, a human being whose volition and other mental faculties are overpowered, restrained, or disturbed, in their regular operation, by an evil spirit.——In church history, the term *Demoniacs* is given to a branch of the Anabaptists, whose distinguishing tenet is, that at the end of the world the devil will be saved.

DEMONOC'RACY, the power or government of demons.

DEMONOL'OGY, a treatise on demons or evil spirits. Demonology in our Saviour's time was no inconsiderable part of philosophy. Thus the Greeks imputed madness sometimes to the agitation and agency of Furies, and sometimes to the influence of Diana or the moon. The Romans thought

insanity was caused by Ceres or the Larvæ; and amongst the Jews, "to have a devil" and "to be mad," were synonymous terms. Everything, in short, which affected either the body or the mind, in an extraordinary manner; every disagreeable phænomenon, which they could not otherwise account for, was by the Jews supposed to be the work of the devil. What gives still more strength to the opinion is, that what one evangelist calls demoniacal possession, is by another mentioned simply as a disease. Besides most, if not all the disorders which are ascribed to in-dwelling demons in the gospel history, are, so far as we are enabled to judge from the description of them there, disorders which existed in the world long before, and are accounted for upon natural principles. The disciples and apostles themselves might perhaps believe these disorders to be real demoniacal possessions, and our Saviour might suffer them to remain in so harmless an error; for he came not to teach speculative philosophy, but to make men holy and happy.

DEMONSTRA'TION, a proof of a proposition founded on axioms and intermediate proof; called *à priori* when the effect is proved from the cause, and *à posteriori* when the cause is proved from the effect. It has been remarked, that the knowledge acquired by demonstration, though certain, is not so clear and evident as intuitive knowledge. In every step that reason makes in demonstrative knowledge, there is an intuitive knowledge of that agreement or disagreement it seeks with the next intermediate idea, which it uses as a proof; for if it were not so, that yet would need a proof, since without the perception of such agreement or disagreement, there is no knowledge produced.

DEM'ONSTRATOR, in anatomy, one who exhibits the parts when dissected.

DEMUL'CENTS, any medicines which lesson acrimony, or the effects of stimulus on the solids, as gums and other mucilaginous substances.

DEMUR', in law, to stop at any point in the pleadings, and rest or abide on that point in law for a decision of the cause.

DEMUR'RAGE, in commerce, an allowance made to the master of a ship by the merchants, for staying in a port longer than the time first appointed.

DEMUR'RER, in law, a pause or stop put to any action upon some point of difficulty which must be determined by the court before any further proceedings can be had in the suit. A demurrer confesses the fact or facts to be true, but denies the sufficiency of the facts in point of law to support the claim or defence. Demurrers are either *general*, where no particular cause is shewn, or *special*, where the causes of demurrer are set forth.

DEM'Y, in heraldry, an epithet for any charge that is borne, half, as a demy-lion, or half-lion.

DEMY', the name of paper of a particular size, of which great quantities are used for printing books on.

DENA'RIUS, in Roman antiquity, the chief silver coin among the Romans, worth 8*d*. As a weight, it was the seventh part of a Roman ounce.——*Denarius Dei*, God's Penny, or earnest-money given and received by the parties to contracts. It was so called because in ancient times it was given to the church or to the poor.

DEN'DRACHATE, in mineralogy, arborescent agate, or agate containing the figures of shrubs or parts of plants.

DEN'DRITE, a stone or mineral on which are the figures of shrubs or trees. Hence the epithets *dendritic* and *dendroid*.

DEN'DROIT, a fossil which has some resemblance in form to the branch of a tree.

DEN'DROLITE, a petrified fossil shrub, plant, or part of a plant.

DENDROL'OGY, a discourse on, or the natural history of, trees.

DENDROM'ETER, an instrument to measure the height and diameter of trees.

DENDROPHO'RIA, in antiquity, the carrying of boughs or branches of trees; a religious ceremony so called, because certain priests called from thence *dendrophori*, or tree-bearers, marched in procession, carrying the branches of trees in their hands in honour of Bacchus, Cybele, Sylvanus, or any other god.

DEN'IZEN, an alien who is made a subject by royal letters patent, holding a middle state between an alien and a natural born subject. He may purchase and possess lands, and enjoy any office or dignity; yet it is short of naturalization: for a stranger, when naturalized, may inherit lands by descent, which a denizen cannot do. If a denizen purchase lands, his issue that are born afterward may inherit them, but those he had before shall not; and as a denizen may purchase, so he may take lands by devise.

DENOM'INATOR, in arithmetic, the parts into which a whole is divided, the number of which is expressed by the numerator of a fraction; but in decimals, the denominator is understood to contain as many ciphers as there are terms in the numerator, and is not written.

DENOUMENT, a French word, by modern custom nearly anglicised, signifying the development or winding up of any event.

DENSE, in botany, an epithet for a panicle having an abundance of flowers very close.

DENS'ITY, closeness of constituent parts; that property in bodies by which they contain a certain quantity of matter under a certain bulk or magnitude: it is directly opposed to *rarity*. A body is said to have double and triple the density of another body, when, being equal, the quantity of matter is in one double or triple the quantity of matter in the other.

DEN'TAGRA, a surgeon's instrument, or forceps for extracting teeth.

DEN'TALIS LA'PIS, in medicine, the tartareous matter which adheres to the teeth, and becomes as hard as the bone itself.

DEN'TAL, an articulation or letter formed by placing the end of the tongue against the upper teeth, or nearer the roof of the mouth, as in *d* and *t*.

DENTA'LIUM, in ichthyology, a genus of shell-fish, the shell consisting of one tubulous straight valve, open at both ends.

DEN'TALITE, a fossil shell of the genus *Dentalium*.

DEN'TATE, or DEN'TATED, in botany, an epithet for a root that consists of a concatenation of joints, resembling a necklace; or for a leaf having points like teeth on the margin.

DENTA'TO-SIN'UATE, having points like teeth with hollows about the edge.

DEN'TES SAPIEN'TIÆ, or Wisdom Teeth, a term applied to the two most backward double-teeth; so called because they come when persons have arrived at years of maturity.

DENTICU'LATE, in botany, having small teeth or notches; as a denticulate leaf, calyx, or seed.

DENTICULA'TION, the state of being set with small teeth, like a saw.

DEN'TIFRICE, any powder or other substance used for cleaning the teeth.

DEN'TIL, in architecture, an ornament in cornices, bearing some resemblance to teeth; used particularly in the Corinthian and Ionic orders.

DEN'TOID, having the form of teeth.

DENUDA'TION, in geology, the act of washing away the surface of the earth by a flood.

DEOB'STRUENT, any medicine which removes obstructions and opens the natural passages of the fluids of the body.

DE'ODAND, a personal chattel which has been the immediate occasion of the death of a rational creature, and for that reason is *given to God;* that is, forfeited to the king, to be applied to pious uses.

DEOX'YDATE, or DEOX'YDIZE, in chemistry, to deprive of oxygen, or reduce from the state of an oxyde.

DEPART'MENT, either a division of territory, as the *departments* of France; or a distinct class of official duties allotted to a particular person.

DEPHLOGISTICATED AIR, a term applied by Dr. Priestley, and others, to what is now called *oxygen gas*, when he first discovered it. It was denominated by Scheele, who discovered it about the same period, vital air.

DEPLOY', the spreading of troops; a military term.

DEPO'NENT, in law, one who gives written testimony under oath to interrogatories exhibited in the court of Chancery.

DEPORTA'TION, a sort of banishment among the Romans, to some island or other place which was allotted to a criminal for the place of his abode, with a prohibition not to leave it, on pain of death.

DEPOS'IT, among civilians, something that is committed to the custody of a person, to be kept without any reward, and to be returned again on demand.

DEPOSI''TION, in law, the testimony given in court by a witness, upon oath.—— *Deposition*, the settlement of substances dissolved in fluids; as, banks are sometimes called *depositions* of alluvial matter.—— Also, the act of dethroning a king; or divesting any one in authority of his power and dignity.

DEPOT, a French word for a store or magazine for depositing goods or merchandize.

DEPRES'SION, *of the sun, or a star*, in astronomy, is its distance at any time below the horizon, measured by an arc of the verti al circle.——*Depression of the pole*, a phenomenon which arises from the spherical figure of the earth; thus, when a person sails or travels towards the equator he is said to depress the pole, because as many degrees as he approaches nearer the equator, so many degrees will the pole be nearer the horizon.—— *Depression of an equation*, in algebra, the reducing an equation to lower degrees, as a biquadratic to a cubic equation, or a cubic to a quadratic.

DEPRESSO'RIUM, a surgical instrument used for depressing the *dura mater* after the operation of trepanning.

DEPRES'SOR, in anatomy, a name applied to several muscles, because they depress the parts to which they are attached.

DEPRES'SUS, in botany, an epithet for the leaves of succulent plants which are hollow or depressed in the middle.

DEPRIVA'TION, an ecclesiastical censure, by which a clergyman is deprived of his dignity.

DEPURA'TION, the act of purifying or freeing fluids from heterogeneous matter. This is done either by decantation, when the feculent matter is deposited in the bottom of the vessel; by boiling and skimming; by filtration; or by clarification.

DEPUTA'TI, in antiquity, persons who attended the army for the purpose of carrying away the wounded from the field of battle and waiting on them. The armourers were also sometimes called *deputati*.

DEP'UTY, in a general sense, signifies a person appointed or elected to act for another; or who is sent upon some business by a community.——In law, a *deputy* is one who exercises an office in another's right; and, properly, the misdemeanor of such deputy shall cause the person he represents to lose his office.——By a *deputation* is generally understood, the person or persons authorized and sent to transact business for others, either with a special commission and authority, or with general powers.

DER'ELICTS, in law, such goods as are wilfully relinquished by the owner. It also signifies a thing forsaken, or cast away by the sea: thus, lands which the sea has suddenly left are called *derelict lands;* and vessels forsaken at sea are called *derelict ships*.

DERIV'ATIVE, in grammar, any word derived (*i. e.* taking its origin) from another, called its *primitive;* as *manhood* from *man*, &c.

IN ALL INDICTMENTS FOR HOMICIDE, THE INSTRUMENT THAT IMMEDIATELY CAUSED THE DEATH, AS WELL AS ITS VALUE, IS SPECIFIED.

THOUGH BY HOMICIDE A FINE IS INCURRED TO THE KING, NO FORFEITURE CAN BE CLAIMED UNLESS A DEODAND IS AWARDED BY A JURY.

DEROGA'TION, the act of annulling, revoking, or destroying the value and effect of anything, or of restraining its operation; as, an act of parliament is passed in *derogation* of the king's prerogative.

DEROG'ATORY CLAUSE, in a person's will, is a sentence or secret character inserted by the testator, of which he reserves the knowledge to himself, with a condition that no will he may make hereafter shall be valid unless this clause is inserted word for word. This is done as a precaution to guard against later wills being extorted by violence or otherwise improperly obtained.

DER'VISE, or DER'VIS, a name given to various Mahometan priests or monks. Many of the dervises travel over the whole of the Eastern world, entertaining the people wherever they come with agreeable relations of the curiosities and wonders they have met with. There are dervises in Egypt, who live with their families, and exercise their trades, of which kind are the dancing dervises at Damascus. They are distinguished among themselves by the different forms and colours of their habits; those of Persia wear blue; the solitaries and wanderers wear only rags of different colours; others carry on their heads a plume, made of the feathers of a cock; and those of Egypt wear an octagonal badge of a greenish white alabaster at their girdles, and a high stiff cap without anything round it. They generally profess extreme poverty, and lead an ascetic life.

DERMES'TES, in entomology, a genus of hemipterous insects, whose larva devour dead bodies, skins, leather, &c. They are of a lengthened oval shape, and are exceedingly destructive in museums and libraries.

DESCEN'SION, in astronomy, an arch of the equator which descends or sets with any sign or point in the zodiac. Descension is either *right* or *oblique*, according as it takes place in a right or oblique sphere. ——The epithet *descending* is also in frequent use in astronomy; as *descending degrees, descending latitude*, &c. And by *descensional difference* is understood, the difference between the right and oblique descension of any planetary body.

DESCENT', in a general sense, is the tendency of a body from a higher to a lower place; thus all bodies, unless otherwise determined by a force superior to their gravity, descend towards the centre of the earth.——In law, it means transmission by inheritance; which is either lineal or collateral. Descent is *lineal*, when it proceeds directly from the grandfather to the father, from the father to the son, and from the son to the grandson; *collateral*, when it does not proceed in a direct line, but from a man to his brother, nephew, or other collateral representative.——*Descent*, in genealogy, the order of succession of descendants in a line or family; or their distance from a common progenitor. Also, a term in heraldry, to express coming down; "as a lion in descent," *i. e.* a lion with his heels upwards, as though in the act of leaping down from an eminence.

DESCRIP'TION, in literature, such a vivid, strong, and beautiful representation of any thing, as shall give the reader a distinct view and satisfactory notion of it.

DESECRA'TION, a word denoting the very opposite of *consecration*, being the act of divesting any thing of a sacred purpose or use to which it has been devoted.

DES'ERT, a large uninhabited tract of land, or extent of country, entirely barren. In this sense, some are sandy deserts, as those of Arabia, Lybia, and Zaara: others are stony, as the desert of Pharan, in Arabia Petrea. "The Desert," absolutely so called, is that part of Arabia south of the Holy-land, where the children of Israel wandered forty years. But the term desert may be, and often is, applied to an uninhabited country, covered with wood or overrun with vegetation incapable of affording sustenance to man.

DESERT'ER, a soldier who quits his regiment without leave; or a sailor who clandestinely leaves his ship. In seaman's language to desert is called "to run."

DESHABIL'LE, (Fr.) an undress.

DESHACHE', in French heraldry, a term for a beast whose limbs are separated from the body, but still remain on the escutcheon, with only a small separation from their natural places.

DESIC'CANT, or DESIC'CATIVE, any medicine or application that has the property of exhausting moisture from, or drying up, a sore.

DESIDERA'TUM, any perfection or improvement not possessed, but which, being much wanted, is therefore desirable.—— This word is frequently applied without the necessary precision. Something which one seeks, though perhaps it may not be strictly desirable to attain—or something which appears excellent, but which has not yet been proved so—is pronounced "a desideratum." Thus, for instance, if we were prematurely to assert, that "this book is a *desideratum* in the present state of our elementary literature," it would not merely be a proof of our vanity, but a misapplication of the word; but if public approbation and extensive patronage should follow its appearance, we might then use it with great propriety.

DESI'GN, in a general sense, the plan, order, representation, or construction of a building, &c., by an outline or general view of it. The word *design*, in painting, is used for the first draught of a large work, with an intention to be executed and finished in a more elaborate manner. Its essential requisites are correctness, good taste, elegance, character, diversity, expression, and perspective.——In music, it denotes the disposition of every part, and the general order of the whole.

DESIPIEN'TIA, in medicine, a defect of reason, or symptomatic frenzy.

DESI'RE, a wish to possess some gratification or source of happiness which is supposed to be obtainable. It may be either spiritual, intellectual, or sensual; but when directed merely to sensual enjoy-

THE ESSENCE OF A "DEVICE" CONSISTS IN METAPHORICAL SIMILITUDE BETWEEN THE THINGS REPRESENTING AND REPRESENTED.

ment, it differs little from animal appetite.

DESMOL'OGY, that branch of anatomy which treats of the ligaments and sinews.

DES'POTISM, a form of government where the monarch rules by his sole and uncontrolled authority.

DESPOUILLE', in heraldry, the whole case, skin, or slough of a beast, with the head, feet, tail, &c., so that being filled and stuffed, it looks like the entire animal.

DESPUMA'TION, a term for clarifying a liquor, by skimming off its froth or excrementitious matter.

DESQUAMA'TION, in anatomy, an exfoliation of bone: also the separation of the cuticle in small scales.

DESUDA'TION, in medicine, a profuse and inordinate sweating, succeeded by an eruption of pustules, called heat-pimples.

DES'UETUDE, the cessation of use, or discontinuance of any practice.

DESULPHURA'TION, in chemistry, the act or operation of depriving of sulphur.

DETACH'MENT, a body of troops selected or drawn out from several regiments or companies, on some special service or expedition. Also, a number of ships, taken from a fleet, and sent on a separate service.

DETENTS', in clock-work, are those stops, which, by being lifted up or let down, lock or unlock the clock in striking.

DETER'GENTS, or DETER'SIVES, medicines which have the power to remove viscid humours, or cleanse the skin of impurities.

DETERMINA'TION, in physics, the tendency of a body in any particular direction.

DETERRA'TION, the uncovering of any thing buried or hidden in the earth.

DETINUE, in law, a writ or action that lies against a person who has goods or other things delivered to him to keep, and who afterwards *detains*, or refuses to deliver them up.

DETONA'TION, or DETONIZA'TION, an explosion, or sudden report made by the percussion and inflammation of certain combustible substances. —— *Detonating Powder*, a composition of charcoal, sulphur, and oxymuriate of potass, which may be inflamed by the heat generated by percussion.

DETRI'TUS, in geology, a mass of substances detached or worn off from solid bodies by attrition; as, diluvial detritus, or the strata which are supposed to have been washed from primitive mountains at the time of the deluge.

DEUTERON'OMY, one of the sacred books of the Old Testament, or the fifth book of the Pentateuch. It is so called, because this last part of the work of Moses comprehends a recapitulation of the law he had before delivered to the Israelites himself.

DEU'TERO-CANON'ICAL in theology, a term applied to certain books of Scripture which were added to the canon after the rest; either because they were not written till after the canon was compiled, or in consequence of some controversy in regard to their canonicity.

DEUTOX'YD, in chemistry, a substance oxydized in the second degree.

DEVAPORA'TION, the change of vapour into water, as in the generation of rain.

DEVI'SE, in law, is the disposition of real estate by will; being distinguished from a bequest of personal estate, that being termed a *legacy*. The person to whom a devise is made is called *devisee*.

DEVI'CE, in painting, an emblem or representation of any thing, with a motto subjoined or otherwise introduced. In heraldry, a name common to all figures, ciphers, characters, rebuses, mottoes, &c. which by its allusions to the names of persons, families, &c. denotes their qualities, nobility, or the like. Badges, impresses, and devices, were greatly in vogue in England, from the reign of Edward I. to that of Elizabeth, when they began to be disused.

DE'VIL, the chief of the apostate angels; Satan, the Tempter of the human race.

DEW, the moisture which is first exhaled from the earth by the sun, and afterwards deposited on the earth in gentle drops during the night, particularly after a hot day; for the heat of the sun having converted all the liquid matter on the earth's surface into aqueous gas, the atmosphere is, in a manner, completely saturated with it.

DEW'LAP, the loose skin that hangs from the throat of an ox, cow, &c.

DEW'-WORM, in entomology, the *Lumbricus terrestris* of Linnæus, an insect often found in decayed wood, as well as in the earth, and which is very destructive to plants.

DEX'TER, the right, or on the right hand or side; as the *dexter point*, in heraldry; by which is meant the right-hand side of the escutcheon.

DEY, the title of the supreme governor in Algiers, Tunis, and the other Barbary states.

DIABE'TES, in medicine, an excessive and morbid discharge of urine.

DIACHALA'SIS, in medicine, a relaxation of the suture of the cranium.

DIACHRIS'TA, medicines applied to the fauces, palate, &c. for the abstersion of phlegm.

DIACH'YLON, in medicine, an emollient digestive plaster.

DIACOUS'TICS, the science of refracted sounds, called also *diaphonics*.

DIACOUS'TIC CURVE, in mathematics, a kind of curve caused by the refraction of rays in a particular direction, so as to form a given ratio with lines which meet them.

DIA'CRII, in Grecian antiquity, an appellation given to a faction at Athens, who favoured oligarchy; in opposition to the *pediaci*, who were for a pure democratical government.

DIA'CRISIS, in medicine, the act of distinguishing diseases one from another by their symptoms.

THE DROPS WHICH ARE OFTEN SEEN HANGING ON LEAVES AT SUNRISE, ARE NOT PRODUCED BY DEW, BUT ARE CONDENSED TRANSPIRATION.

DIADEL'PHIA, in the Linnæan system of botany, a class of plants, the 17th in order; comprehending all those with papilionaceous and hermaphrodite flowers, and leguminous seed-vessels. The distinguishing characteristic of this class is, that the stamens adhere together; forming two dissimilar bodies or filaments, the one standing above the pistil, and the other surrounding it.

DI'ADEM, anciently, a head-band or fillet worn by kings as a badge of royalty. It was made of silk, thread, or wool, tied round the temples and forehead, the ends being tied behind, and let fall on the neck. In modern usage, the mark of royalty, worn on the head.——*Diadem*, in heraldry, is applied to certain circles, or rims, serving to enclose the crowns of sovereign princes. In figurative language, the word diadem denotes empire or supreme power.

DIÆR'ESIS, in surgery, an operation serving to divide and separate a part when its continuity is a hindrance to the cure. ——*Diæresis*, in grammar, the division of one syllable into two, which is usually denoted by two dots over a letter, as in aulaï for aulæ.

DI'ADROM, the time in which the vibration of a pendulum is performed.

DIAGNOSTICS, in medicine, a term given to those signs which indicate the state of a disease, its nature and cause, the symptoms by which it is known or distinguished from others. When the diagnostics are common to several diseases, they are called *adjunct;* when they always attend a particular disease, the word *pathognomonic* is used.——The term *diagnostic signs* is also used in botany, as the signs or characters by which plants are distinguished.

DIAG'ONAL, in geometry, a right line drawn across a quadrilateral figure from one angle to another, by some called the diameter of the figure.

DI'AGRAM, a geometrical delineation, for the purpose of demonstrating the properties of any figure, as a square, triangle, &c.

DI'AL, or SUN'-DIAL, an instrument for measuring time by means of the shadow of the sun; being a plate, or plain surface, on which lines are drawn in such a manner, that the shadow of a wire, or the upper edge of another plane, erected perpendicularly on the former, may show the true time of the day. The edge of the plane, which shows the time, is called the *stile;* the line on which this plane is erected, is the *substile;* and the angle included between the substile and stile, is called the *elevation* or height of the stile. Sun-dials are differently denominated according to their different situation, and the figure of the surfaces upon which they are described, as horizontal, vertical, equinoctial, polar, direct, erect, declining, inclining, reclining, cylindrical, mural, parallel, &c.

DI'ALECT, the form or idiom of a language, peculiar to a province or any particular part of a country. A dialect is, in fact, the branch of a parent language, with such alterations as time or accident may have introduced among descendants of the same stock, living in separate or remote situations. The dialects of Greece were admitted to form a part of their language, as the Attic, Ionic, Poetic, Æolic, and Doric dialects, which were used either separately or intermixed.

DIALEC'TUS, that branch of logic which teaches the art of reasoning.

DI'ALLAGE, a mineral of a lamellar or foliated structure.

DI'ALLING SPHERE, an instrument made of brass, with several semi-circles sliding over each other upon a moveable horizon; serving to shew the nature of spherical triangles, as well as to give the true idea of drawing dials on all sorts of planes.

DIAL'OGISM, in rhetoric, is used for the soliloquy of persons deliberating with themselves. It is also, in a more extensive sense, taken for discourse in general, whether held by a person alone, or in company with others.

DI'ALOGUE, a verbal or written discourse between two or more persons.

DIAL'YSIS, a mark or character, consisting of two points placed over one of two vowels, as *mosäic*, to separate the diphthong, and show that they must be sounded distinctly.——In rhetoric, *dialysis* is a figure of speech in which several words are placed together, without the aid of a conjunction, as *veni, vidi, vici.*——In medicine, *dialysis* is a term denoting great relaxation or weakness of the limbs.

DIAM'ETER, in geometry, a right line passing through the centre of a circle, or other curvilinear figure, and terminated at each side by the circumference. It thus divides the circle into two equal parts and is the greatest chord: hence we have a method of describing a semicircle upon any line, assuming its middle point for the centre. The diameter of a circle is to the circumference, as 7 to 22. The square of the diameter multiplied by ·7854, is the area. The cube of the diameter multiplied by ·5236, is the solid contents of a sphere.

DI'AMOND, the most valuable and the hardest of gems. When pure, it is perfectly clear and pellucid, and is eminently distinguished from all other substances, by its vivid splendour, and the brightness of its reflections. Though found of different shapes, and sometimes accidentally tinged with several colours, yet it ever carries the same distinguishing characters. Diamonds are generally very small; but a few large ones have been found, for which incredible prices have been given. The largest ever known belonged to the king of Portugal; it weighed 1680 carats, and was valued, although uncut, at 224,000,000*l.* sterling; the one in the sceptre of the emperor of Russia weighs 779 carats, and is valued at upwards of 4,000,000*l.*, but was bought by the empress Catharine for about 135,000*l.* The Pitt diamond, which at that time was one of the largest, weighed 136 carats, and cost Louis XIV. 130,000*l.* The places

THE DIAMOND AND CHARCOAL ARE SIMILAR SUBSTANCES IN THEIR CHEMICAL NATURE, AND DIFFER ONLY IN THEIR TEXTURE.

WHEN DUG OUT OF THE EARTH, DIAMONDS HAVE NO BRILLIANCY, BUT ARE COVERED WITH AN EARTHY CRUST.

whence diamonds are brought are the island of Borneo, and the kingdoms of Visapour, Golconda, Bengal, in the East Indies; and the Brazils, in the West Indies. These gems consist of pure carbon, with a specific gravity of 3·5: and the hardest tools making no impression on them, they are cut and ground by the powder of their own substance. In the experiments of modern chemists, the diamond has been reduced to ashes by the power both of the furnace and the burning-glass.——*Rough Diamond*, is the stone as it comes from the mines.——*Rose Diamond*, is one which is quite flat underneath, with its upper part cut in numerous little faces, usually triangles, the uppermost of which terminate in a point.——*Table Diamond*, is that which has a large square face at top, encompassed with four lesser.——*Brilliant Diamond*, is that which is cut in faces both at top and bottom; and whose table or principal face is flat.——*Diamonds* are valuable for many purposes. Their powder is the best for the lapidary and gem engraver, and more economical than any other material for cutting, engraving, and polishing hard stones. Glaziers use them for cutting their glass; their diamond being set in a steel socket, and attached to a small wooden handle. It is very remarkable, that only the point of a natural crystal can be used; cut or split diamonds scratch, but the glass will not break along the scratch, as it does when a natural crystal is used. The diamond has also of late years become an article of great value to engravers, particularly in drawing or ruling lines, which are afterwards to be deepened by aqua fortis; for which steel points, called etching needles, were formerly used.

DI'AMOND BEETLE, a beautiful insect, so called from the marks on its wing-sheaths, which appear as brilliant as gems.

DIAN'Æ AR'BOR, silver and quicksilver dissolved in nitric acid, the crystalizations resembling a tree.

DIAN'DRIA, the second class of the Linnæan system of plants, containing three orders, *Monogynia*, *Digynia*, and *Trigynia*, with two stamens.

DIANŒ'A, in rhetoric, a figure of speech by which a correct interpretation is given to a subject suitable to the occasion.

DIAN'THUS, in botany, the PINK, a genus of plants, class 10 *Decandria*, order 2 *Digynia*.

DIAPA'SON, in music, a musical interval, by which most authors, who have written upon the theory of music, use to express the octave of the Greeks. The diapason is the first and most perfect of the concords; if considered simply, it is but one harmonical interval; though, if considered diatonically, by tones and semitones, it contains seven degrees, viz. the three greater tones, two lesser tones, and two greater semi-tones.—— *Diapason*, the fundamental or standard scale by which musical instruments are made.

DIAPEN'TE, in music, a fifth; an interval making the second of the concords, and with the diatessaron, an octave.——In medicine, a composition of five ingredients.

DI'APER, a kind of figured linen cloth, much used for towels or napkins.

DI'APHRAGM, in anatomy, a large musculous membrane or skin placed transversely in the trunk, and dividing the thorax from the abdomen.

DIAPH'ANOUS, an appellation given to all transparent bodies, or such as transmit the rays of light.

DIAPH'ORA, in rhetoric, a figure of speech, in which a word, when repeated, is taken in a different sense from what it was at first understood.

DIAPHORE'SIS, in medicine, augmented perspiration.

DIAPHORET'ICS, medicines which promote perspiration. *Diaphoretics* differ from *sudorifics*; the former only increase the insensible perspiration, the latter excite the sensible discharge called *sweat*.

DIAPOR'ESIS, in rhetoric, a figure of oratory, expressive of the speaker's doubt or hesitation as to the manner in which he should proceed in his discourse, the subjects he has to treat of being all equally important.

DIARRHŒ'A, a disorder which consists in a frequent and copious discharge of a bilious humour from the intestines.

DIARTHRO'SIS, in anatomy, a kind of articulation, or juncture of the bones, in which there is an evident motion.

DI'ARY, a register of daily occurrences and observations; or an account of what passes in the course of a day.

DI'ASCHISM, in music, the difference between the comma and enharmonic diesis, commonly called the lesser comma.

DIA'SIA, in Grecian antiquity, a festival kept at Athens in honour of Jupiter the *Propitious*.

DI'ASPORE, a mineral of a pearly gray colour, and infusible.

DIASTAL'TIC, an epithet given by the Greeks to certain intervals in music, as the major third, major sixth, and major seventh.

DIAS'TASIS, a term used by ancient physicians for a distension of the muscles, or separation of the bones.

DIAS'TEMA, in rhetoric, a modulation of the tones of the voice, by marking with precision the intervals between its elevation and depression.——In *music*, a space or interval.

DIAS'TOLE, among physicians, a dilatation of the heart, auricles, and arteries; it stands opposed to *systole*, or contraction of the same parts.——*Diastole*, in grammar, a figure of prosody, by which a syllable naturally short is made long.

DI'ASTYLE, an edifice in which three diameters of a column are allowed for the intercolumniations.

DIASYR'MOS, in rhetoric, a kind of hyperbole, being an exaggeration of something low and ridiculous; ironical praise.

DIATES'SARON, in music, a concord or harmonic interval composed of a greater tone, a lesser tone, and one greater semitone. Its proportion is as 4 to 3, and it is

called a perfect fourth.——In theology, the four Gospels.

DIATON'IC, an epithet given to music, as it proceeds by tones and semi-tones, both ascending and descending. Thus we say, a *diatonic* series; a *diatonic* interval; *diatonic* melody or harmony.

DI'ATRIBE, a continued disputation or controversial discourse.

DIATRI'TOS, in medicine, a term given to three days' abstinence enjoined by physicians of the Methodic sect upon their patients.

DI'CAST, in ancient Greece, an officer answering nearly to our juryman.

DICE, cubical pieces of bone or ivory, dotted on their face from one to six; and used for gambling purposes. They are said to be of great antiquity, and to have been invented by Palamedes at the siege of Troy, for the amusement of the officers and soldiers. Dice pay a very heavy duty to government, and cannot legally be imported.

DICHOT'OMOUS, in botany, an epithet for a stem, &c. regularly dividing by pairs from top to bottom.——*Dichotomous-corymbed*, composed of corymbs, in which the pedicles divide and subdivide by pairs.

DICHOT'OMY, in astronomy, that phasis or appearance of the moon, when she is bisected, or shows just half her disk. In this situation the moon is said to be in her quadrature.

DICOTYL'EDON, in botany, a plant whose seeds divide into two lobes in germinating. Hence the epithet *dicotyledonous*.

DICTA'TOR, in ancient Rome, a magistrate created in times of exigence and distress, and invested with unlimited power. He had authority to raise or disband troops, and to make war or peace, and that without the consent either of the senate or people. The ordinary duration of his office was only for six months, during which time all other magistracies ceased, the tribuneship excepted. Whenever he appeared in public, he was attended by twenty-four lictors, or double the number allowed a consul. Extensive, however, as his power was, he was nevertheless under some restrictions: he could not, for instance, spend the public money arbitrarily, leave Italy, or enter the city on horseback. The choice of dictator was not, as in the case of other magistrates, decided by the popular voice, but one of the consuls appointed him by command of the senate. A dictator was also sometimes named for holding the *comitia* for the election of consuls, and for the celebration of public games. For the space of four hundred years this office was regarded with veneration, till Sylla and Cæsar, by becoming perpetual dictators, converted it into an engine of tyranny, and rendered the very name odious.

DICTIONARY, in its first and most obvious sense, signifies a vocabulary, or alphabetical arrangement of the words in a language, with their definitions. But now, that the various branches of science have become so much extended, the term is also applied to an alphabetical collection of the terms of any art or science, with such explanations or remarks as the writer may deem necessary for their elucidation.

DIDAC'TIC, containing doctrines, precepts, or rules; intended to instruct.

DIDAC'TIC PO'ETRY, that species of metrical composition which has instruction for its primary object. But though its ostensible aim is to impart instruction in the garb of verse, it may and often does attain an animated and elevated character, mingling the flights of poetic genius with natural descriptions and moral axioms, and thereby captivating the senses, while it amends the heart.

DIDAC'TYLOUS, in zoology, an epithet for having two toes.

DIDECAHE'DRAL, in crystalography, having the form of a decahedral (or ten-sided) prism, with pentahedral (or five-sided) summits.

DIDODECAHE'DRAL, in crystalography, having the form of a dodecahedral (twelve-sided) prism, with hexahedral (six-sided) summits.

DIDRACH'MA, a piece of money, the fourth of an ounce of silver.

DIDYNA'MIA, the 14th class of the Linnæan system of plants, containing two orders, *Gymnospermia* and *Angiospermia*, with two long and two short stamens.——To this genus belong balm, germander, lavender, thyme, betony, mint, basil, foxglove, &c.

DIE, a stamp used in coining, by which a piece of prepared metal is impressed with due force. Coins are generally completed by one blow of the coining-press; and at the Royal Mint these presses are so contrived by machinery, that they shall strike, upon an average, sixty blows in a minute. Medals are usually in very high relief, and the effect is produced by a succession of blows.

DI'ES, (days) in law, are distinguished into *Dies juridici*, days on which the court sits for the administration of justice; *Dies non* (juridici), days on which no pleas are held in any court of justice; and *Dies datus*, a day, or time of respite, given by the court to the defendant in a cause.——*Dies caniculares*, in astronomy, the dog-days.——*Dies critici*, in medicine, days in which some diseases are supposed to arrive at a crisis.——Among the Romans, days were distinguished in a variety of ways; the most important of which were *Dies nefasti* or *Dies atri*, days devoted to religious purposes, on which it was unlawful to do any public business: *Dies fasti*, similar to the *Dies juridici* of modern times; and *Dies feriati*, like our *Dies non juridici*, when the courts were shut.

DIE'SIS, the mark ‡; called also a double-dagger, and used as a mark for reference.——*Diesis*, in music, the division of a tone less than a semi-tone; or an interval consisting of a less or imperfect semi-tone.

DI'ET, food regulated by the rules of medicine. It appears that the best way

to preserve health, is to live upon plain simple foods, lightly seasoned, and in a quantity agreeable to the age, strength of the stomach, sex, constitution, and chiefly to what nature has by experience been found to require. Generally, indeed, hunger shews the best time of eating, as thirst does of drinking; but if either be indulged to excess, our health and spirits will both suffer. In summer, when the spirits and fluid parts are apt to evaporate, the diet should be moist, cooling, and easy of digestion, to repair the loss with the greater speed; but in winter, the stomach will admit of more solid and heating aliments. The golden rule, however, seems to be, to use great moderation both in eating and drinking; and it is indisputable that early habits of self-command, in the regulation of the appetite, are of paramount importance to all who would enjoy good health and attain a vigorous old age.——*Diet*, in German politics, a convention of princes, electors, ecclesiastical dignitaries, and representatives of free cities, to deliberate on the affairs of the empire.

DI'ET-DRINK, drink prepared with medicinal ingredients. The decoction of sarsaparilla and mezereon, and the Lisbon diet-drink, are the most common and most esteemed.

DIETET'ICS, the science or philosophy of diets; or that which teaches us to adapt particular foods to particular organs of digestion, or to particular states of the same organ, so that the greatest possible portion of nutriment may be extracted from a given quantity of nutritive matter.

DIEU ET MON DROIT (French; signifying *God and my right)*; the motto of the royal arms of England, first assumed by king Richard I. to intimate that he did not hold his empire in vassalage of any mortal. It was afterwards taken up by Edward the Third, and was continued, without interruption, to the time of William III. who used the motto *je maintiendray*, though the former was still retained upon the great seal. After him queen Anne used the motto *semper eadem*, which had been before used by queen Elizabeth but since Anne's time, *Dieu et mon droit* has continued to be the royal motto.

DIEU ET SON ACTE, a maxim in law, that the act of God shall not be a prejudice to any man.

DIEXAHE'DRIA, in natural history, a genus of pellucid and crystaliform spars, composed of two pyramids, joined base to base, without any intermediate column: the diexahedria are dodecahedral, or composed of two hexangular pyramids.

DIFFARREA'TION, in Roman antiquity, a ceremony whereby the divorce of the priests was solemnized; or the dissolving of marriage contracted by confarreation.

DIF'FERENCE, in logic, an essential attribute belonging to any species that is not found in the genus; being the idea that defines the species.——*Difference*, in arithmetic, the remainder, when one number has been subtracted from another.——*Differences*, in heraldry, certain additions to a coat of arms, serving to distinguish one family from another, or to show how distinct a younger branch is from the elder or principal branch.

DI'GEST, in law literature, a collection of the decisions of the Roman lawyers, properly digested, or arranged under distinct heads, by order of the emperor Justinian.

DIGES'TION, that process in the animal body, or action of the stomach, by which food is converted into chyme, before it passes into the intestines, and is there separated by the chyle into nutritive and excrementitious parts, effected chiefly by the solvent power of the gastric juice.——In chemistry, the operation of exposing bodies to a gentle heat, to prepare them for some action on each other; or the slow action of a solvent on any substance. By this process, essences, elixirs, and tinctures are made.

DIGES'TIVE, in medicine, any preparation which increases the tone of the stomach, and aids digestion.——In surgery, an application which ripens an ulcer or wound, or disposes it to suppurate.

DIF'FORM, in botany, an epithet for leaves or flowers, which do not correspond in size or proportion.

DIGAS'TRIC, an epithet given to a muscle of the lower jaw.

DIGES'TER, a chemical vessel or instrument to prevent the loss of heat by evaporation.

DI''GIT, in astronomy, the twelfth part of the diameter of the sun or moon: a term used to express the quantity and magnitude of an eclipse. Thus an eclipse is said to be of six digits, when six of these parts are hid.——*Digits*, or *Monades*, in arithmetic, signify any one of the ten numerals, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.——*Digit* is also a measure taken from the breadth of the finger; the word being derived from *digitus*, a finger; thus indicating the humble means originally employed in computations. It is properly three quarters of an inch.

DIGITA'LIS, or Foxglove, in botany, a genus of plants, which are for the most part herbaceous, with a root that is either biennial or perennial. The stalk rises two or three feet high, and bears spikes of brown or purple flowers. The purple foxglove is a native of England, and is much used in medicine, it having the remarkable property of diminishing the strength and frequency of the pulse.

DI''GITATE, or DI''GITATED, in botany, an epithet for a leaf which branches into several distinct leaflets, like fingers; or when a simple, undivided petiole connects several leaflets at the end of it.

DIG'LYPH, in architecture, a kind of imperfect triglyph, console, or the like, with two channels or engravings, either circular or angular.

DI'GITALINE, a powerful poison, derived from the *digitalis purpurea*, or foxglove, the properties of which it possesses in a very concentrated state. It is a brown coloured substance, deliquescent, and extremely bitter.

DIG'NITARY, in the canon law, an ecclesiastic who holds a dignity, or a benefice which gives him some pre-eminence over mere priests and canons; as a bishop, dean, arch-deacon, prebendary, &c.

DIG'NITY. This word, in a general sense, signifies a nobleness or elevation of mind; and is opposed to *meanness* and *vice*, the true dignity of human nature being based on moral rectitude and religious veneration. In a more extended sense, it means, elevation of deportment; and also an elevated office, civil or ecclesiastical.——In astrology, the term *dignity* is used to denote an advantage which a planet has on account of its being in some particular place of the zodiac, or in a particular station with respect to other planets.

DI'GRAPH, a union of two vowels, of which one only is pronounced, as in *bread*. It is essentially different from a diphthong, which consists of two vowels also, but produces a sound which neither of the vowels has separately.

DIGRES'SION, in rhetoric or literary composition, that passage, or narration, which deviates from the main subject, but which may have some relation to it, or be useful by way of illustration.

DIGYN'IA, in botany, an order in the Linnæan system, consisting of plants that have two pistils.

DIHEXAHE'DRAL, in crystalography, having the form of a hexahedral prism with trihedral summits.

DILAPIDA'TION, in law, the ruin or damage which accrues to a house in consequence of neglect.

DILATA'TION, in surgery and anatomy, signifies the widening the orifice of a wound, or the distension of a vessel.

DILEM'MA, in logic, an argument which cannot be denied in any way without involving the party denying in contradictions; or a position involving double choice, each presenting difficulties. A dilemma is usually described, as though it always proved the absurdity, inconvenience, or unreasonableness of some opinion or practice, and this is the most usual design of it. But it is plain, that it may be used to prove the truth or advantage of any thing proposed: as, "In heaven we shall either have desires, or not: if we have no desires, then we have full satisfaction: if we have desires, they shall be satisfied as fast as they arise: therefore, in heaven we shall be completely satisfied." This sort of argument may be composed of three or more members, and may be called *trilemma*. It is also called *syllogismus cornutus*, a horned syllogism; its horns being so disposed, that if you avoid the one, you run against the other.

DILETTAN'TE, one who delights in promoting science of the fine arts.

DILU'VIUM, in geology, strata of sand, loam, gravel, &c. apparently accumulated by water, and supposed to have been caused by the deluge.

DIMEN'SION, the measure or compass of a thing. A line has one dimension, or length; a superficies two, namely length and breadth; and a solid three, namely length, breadth and thickness. The word is generally used in the plural, and denotes the whole space occupied by a body, or its size and capacity; as, the *dimensions* of a room, ship, &c.

DIKE, or DYKE, a mound of earth, stones, or other materials, intended to prevent low land from being inundated by the sea, &c., as the dikes of Holland.

DIMINU'TION, in architecture, a contraction of the upper part of a column, by which its diameter is made less than that of the lower part. It generally commences from one third of the height of the column. ——*Diminution*, in rhetoric, the exaggerating what you have to say by an expression that seems to diminish it.——In music, the imitation of or reply to a subject in notes of half the length or value of those of the subject itself.

DIMIN'UTIVE, in grammar, a word or termination which lessens the meaning of the original word; as, *rivulet*, a small river; *manikin*, a little man.

DIM'ISSORY, dismissing to another jurisdiction.——*A letter dimissory*, is one given by a bishop to a candidate for holy orders, having a title in his diocese, directed to some other bishop, and giving leave for the bearer to be ordained by him.

DIM'ITY, a kind of white cotton cloth, ribbed or figured. It was originally imported from India, but is now manufactured in Lancashire, and various other parts of Britain.

DI'OCESAN, a bishop who has charge of a particular diocese.

DI'OCESE, or DI'OCESS, the district or circuit of a bishop's jurisdiction. The name diocese began first to be used in the fourth century, when the exterior polity of the church began to be formed upon the model of the Roman empire. England, in regard to its ecclesiastical state, is divided into two provinces, viz. Canterbury and York, and each province into subordinate dioceses; the province of Canterbury contains twenty-one dioceses, and that of York three. These are divided into archdeaconries, which are subdivided into rural deaneries and parishes.

DIOC'COUS, in botany, an epithet for a capsule consisting of two cohering grains or cells, with one seed in each.

DIOCTAHE'DRIA, in crystalography, a genus of pellucid and crystaliform spars, composed of two octangular pyramids, joined base to base, without any intermediate column.

DI'ODON, in ichthyology, the sun-fish; a genus of fishes of a singular form, appearing like the fore part of the body of a deep fish amputated in the middle.

DIOE'CIA, in botany, a class in the Linnæan system, comprehending such plants as have no hermaphrodite flowers, but the males and females on distinct individuals, as the poplar, aspen, amber tree, willow, ozier, &c. The epithet for plants of this kind is *dioecious*.

DI'OMEDE, in ornithology, a web-footed, aquatic fowl, about the size of a common domestic hen.

DILATATION, IN PHYSICS, IS A MOTION OF THE PARTS OF A BODY, BY WHICH IT IS SO EXPANDED AS TO OCCUPY GREATER SPACE.

A PLACEMAN'S SOLILOQUY: "A STRONG 'DILEMMA' IN A DESPERATE CASE! TO ACT WITH INFAMY, OR QUIT MY PLACE."

DIONYSI'ACA, a name given by the Grecians to all theatrical entertainments or diversions of the stage, because playhouses were sacred to Bacchus and Venus, the deities of sport and pleasure.

DIOP'SIDE, a rare mineral, of a pale green colour, occurring in prismatic crystals, and regarded as a variety of *augite*.

DIOP'TRICS, the science of refractive vision; or that part of optics which considers the different refractions of light in passing through different mediums, as air, water, glass, &c. It demonstrates the different directions in which the rays of light move, according as they are broken on plane or curved substances; and the principles deduced from these observations determine the nature of the various lenses, explain the manner in which the light is refracted in the human eye, and teach the manner of seeing through lenses, and the composition of them, consequently the theory of telescopes, magnifying glasses, &c. By its aid, therefore, the eye has been enabled to reach objects previously unknown, and thus to obtain immense advantages in pursuing the science of astronomy.

DIORAM'A, the name of a building erected in the Regent's Park, London, in which a novel and very beautiful mode of depicting scenery is exhibited; also the name given to the method of delineating it. "The advantage which this mode of representing the face of nature possesses over any other yet invented is, that it causes the light to play at will all over the picture, so that the spectator can hardly help imagining himself placed on the very spot, when he perceives the rays of the sun now lighting up one range of mountains, now another, and beholds them peeping out from behind masses of clouds, which gradually become overcast as if with rain, and then the lowering effect giving way in its turn to bright gleams of sunshine—which enlighten the bosoms of the distant lakes, glitter upon the purling brooks, and then die away behind the darker skirts of the surrounding woods and thickets. All this is produced by a mode of uniting transparent painting to the usual opaque method, and causing the daylight to fall upon the picture, both from before and behind. At the same time, while by means of coloured transparent blinds, suspended both above and behind the picture, and which are put in motion by means of machinery, the rays of light can be intercepted and made to fall at pleasure in graduated tints upon every part of the picture in succession." The Diorama contains two pictures; of these one only is seen at a time, and the scene is changed by causing the saloon containing the spectators to revolve on its axis. The number and colour of the moveable blinds must be determined by the judgment and skill of the artist. Each picture occupies several thousand square feet of canvas; and a succession of novelties are always in preparation to gratify the lovers of scenic exhibitions.

DIOSCO'REA, in botany, a genus of plants, class 22 *Dioecia*, order 6 *Hexandria*. The species are perennials: there is no corolla in either the male or female flowers; and the fruit is a compressed large capsule, of a triangular form, containing three valves, and divided into three cells.

DIOSCU'RIA, in antiquity, a festival observed by the Spartans in honour of Castor and Pollux.

DIOS'PYROS, in botany, a genus of plants, class 23 *Polygamia dioecia*, order 2 *Octandria monogynia*. The species are trees, varieties of the plum.

DIP, the depression of a magnet below the horizontal plane.——In geology, the *dip of a stratum* is its greatest inclination to the horizon, or that on a line perpendicular to its direction or course.

DIPET'ALOUS, in botany, an epithet for a corolla having two petals only.

DIPH'THONG, the union of two vowels pronounced in one syllable. The sound is not simple, but so blended as to be considered as forming but one syllable, as *noise, bound, joint*, &c.

DIPH'YLLOUS, in botany, an epithet for a calyx, &c. having two leaves.

DIP'LOE, in anatomy, the medullary substance, or porous part between the laminæ or plates of the skull.

DIPLO'MA, a written document conferring some power, privilege, or honour; viz. an instrument or licence given by colleges, societies, &c. to a clergyman to exercise the ministerial function, or to a physician to practise the profession, &c. after passing examination, or admitting him to a degree. ——In chemistry, "to boil in diploma," is to put the vessel which contains the ingredients into a second vessel, to which the fire is applied.

DIPLO'MACY, the customs, privileges, and practice of public business by ambassadors, envoys, and other representatives of princes and states at foreign courts. It has been truly observed, that in times not very distant, it was sufficient to entertain a royal master by the gossip of a capital, the intrigues of ladies and gentlemen of the bed-chamber, and the cabals of rival ministers. Now, the political correspondent of a cabinet is compelled to enquire into the working of the complex machinery of modern society; to observe constantly the pulse of the whole body politic; to keep in view the moral and physical resources of nations; to defend the rights of his country, on the grounds of law and reason; to give information to the minister, from whom he holds his instructions, and to enable his government to profit by the intelligence he imparts, not only in the management of its foreign concerns, but likewise of its internal resources. To be a perfect diplomatist, in fact, in the present state of the world, a man should be well acquainted with the municipal laws of different countries, versed in the sciences, from which industry and arts derive their splendour and a state its strength, and equal to any of the tasks to which those with whom he is brought into contact might put his learning and saga-

THE FRENCH DIRECTORY WAS FORMED BY THE CONVENTION IN 1795, AND OVERTURNED BY THE SUCCESSFUL AMBITION OF BUONAPARTE.

THE DIRECTORY UNDER THE ENGLISH COMMONWEALTH, WHICH WAS ESTABLISHED IN 1644, PROHIBITED THE LITURGY AND CHURCH MUSIC.

city.——It was one part of the business of the congress assembled at Vienna, in 1814, to regulate the degrees of rank to which the various *diplomatic agents* were entitled: viz. 1. ambassadors; 2. envoys extraordinary and ministers plenipotentiary; 3. ministers resident; 4. *chargés d'affaires;* 5. secretaries of legation and *attachés*. Ministers at a court are denominated a *diplomatic* body.

DIPLOMATICS, the science of diplomas, or of ancient writing, literary and public documents, decrees, charters, &c., having for its object the deciphering of old writings and ascertaining their authenticity, &c.

DIPLO'PIA, in medicine, a disease in the eye, which causes the person to see an object double or treble.

DIP'NOUS, in surgery, an epithet for wounds which have two orifices.

DIP'PING, among miners, signifies the interruption, or breaking off of the veins of ore; an accident often attended with much trouble, before the ore can again be discovered.

DIP'PING NEEDLE, a magnetic needle so duly poised about an horizontal axis, that, besides its direction towards the pole, it will always point to a determined degree below the horizon. In the equatorial regions, the needle takes a horizontal position: but as we recede from the equator, towards either pole, it dips or inclines one end to the earth, the north end as we proceed towards the north, and the south end as we proceed southward.

DIP'SACUS, in botany, contains four species, of which the *dipsacus fullonum*, or cultivated teasel, is reared in great quantities in the west of England, for raising the nap upon woollen cloths, by means of crooked awns upon the heads. For this purpose they are fixed on the circumference of a large broad wheel, which turns round while the cloth is held against them.

DIP'TERA, in entomology, the sixth order of insects in the Liunæan system, comprehending those which have two wings with balancers, as gnats, flies, &c.

DIP'TYCHA, or DIP'TYCH, in Roman antiquity, a public register of the names of the consuls and other magistrates. Among the early Christians, they were tablets, on one of which were written the names of the deceased, and on the other those of the living patriarchs, bishops, &c. or those who had done any service to the church.

DI'PUS, in zoology, the jerboa, a genus of mammalia, containing four species. The *Dipus sagitta*, or Egyptian jerboa, is about the size of a rat, and was known to the ancients by the name of the two-footed mouse. It is found in various parts of Africa, and in the eastern provinces of Siberia. In its postures and motions it resembles a bird. It inhabits subterranean apartments, in which it reposes during the day, choosing the night for its excursions and for obtaining its food.

DIPYRE, a mineral occurring in minute prisms. Before the blow-pipe it melts with ebullition, and its powder on hot coals phosphoresces with a feeble light.

DIRADIA'TION, in medicine, an invigoration of the muscles by the animal spirits.

DI'RÆ, in the Roman divination, signifies any unusual accidents or uncommon appearances, as sneezing, stumbling, strange voices, apparitions, spilling salt or wine upon the table or upon one's clothes, meeting wolves, hares, foxes, &c.

DIRECT', in law, an epithet for the line of ascendants and descendants in genealogical succession.——*Direct*, in astronomy, is when a planet moves forward in the zodiac, according to the natural order and succession of the signs, in distinction from the *retrogade*.——In optics, a *direct ray* is one which is carried from a point of the invisible object directly to the eye, without being turned out of its rectilinear direction by any intervening body.

DIRECTION, Line of, in mechanics, the line of motion which any natural body observes, according to the force impressed upon it.——*Angle of direction*, the angle comprehended between the lines of direction of two conspiring powers.——*Direction word*, in printing, the word which is sometimes put at the bottom of a page, and which begins the next page.

DIRECT'OR, a person appointed to transact the affairs of a public company; as the *director* of a bank, assurance office, &c.——*Director*, in surgery, a grooved probe to direct the edge of the knife or scissars in opening sinuses or fistulæ, &c. that by this means the subjacent nerve and tendons may remain unhurt.

DIRECT'ORY, a book containing an alphabetical list of the inhabitants of a town, with their places of abode. Also, a book containing directions for public worship, or religious services.——In France, the term *Directory* was given to five officers, to whom the executive authority was committed by the constitution of the year 3 of the republic. The seven ministers of state were immediately under, and were appointed and removed by the directory.

DIRGE, a song or tune intended to express grief, sorrow, and mourning.

DIS, a prefix or inseparable preposition, which generally has the force of a privative and negative; as *disarm, disallow, disoblige*. In some cases, however, it denotes separation, as in *distribute, disconnect*.

DISABIL'ITY, in law, an incapacity in a man to inherit or take a benefit which otherwise he might have done, which may happen by the act of any ancestor; by the act of the party himself; by the act of the law; and by the act of God.——*Disability* differs from *inability*, in denoting deprivation of ability; whereas inability denotes destitution of ability, either by deprivation or otherwise.

DISAFFECTION, in a political sense, signifies disloyalty; not merely alienation of affection, but positive dislike and enmity.

DISAFFOR'EST, to strip of forest laws and their oppressive privileges.

DISAGGREGA'TION, the act or operation of separating an aggregate body into its component parts.

DISC, or DISK, the body and face of the sun, moon, or a planet, as it appears to us on the earth; or the body and face of the earth, as it would appear to a spectator in the moon.——In optics, the magnitude of a telescope glass, or the width of its aperture.——*Disc*, in botany, an aggregate of florets forming, as it were, a plane surface; or the middle plain part of a radiated compound flower, as in the marigold or daisy.

DISCHAR'GE, a word of various significations. Applied to *fire-arms*, it means an explosion; to *fluids*, a flowing, issuing, or throwing out, as water from a spring or spout. It also denotes a *dismissal* from office or service; a *release* from debt, obligation, or imprisonment; and the *performance* of any office, trust, or duty.

DISCHARG'ING ROD, an instrument used in electrical experiments, formed of metal wire with balls at the end, a joint in the middle, and a glass handle.

DISCI'PLE, one who learns anything from another: thus the followers of any teacher, philosopher, &c. are called disciples. In the more common acceptation, among Christians, the disciples denote those who were the immediate followers and attendants on Christ, of whom there were seventy or seventy-two; but the word is also correctly applied to all Christians, as they profess to learn and receive his doctrines and precepts. The words *disciple* and *apostle* are often synonymously used in the gospel history, but sometimes the apostles are distinguished from disciples as persons selected out of the number of disciples, to be the principal ministers of his religion.

DISCIPLINA'RIAN, one who is well versed in military and naval tactics and manœuvres: and who exacts a strict observance of them from those under his command.

DIS'CIPLINE, subjection to laws, rules, order, and regulations, either in a moral, ecclesiastical, or military sense. It also denotes that chastisement or external mortification which some religious devotees inflict on themselves.

DISCLAIM'ER, in law, a plea containing an express or implied denial.

DIS'CORD, in music, a union of sounds which is unharmonious, grating, and disagreeable to the ear; or an interval whose extremes do not coalesce. It is opposed to *concord* and *harmony*. The second, fourth, and seventh, with their octaves, and, in general, all intervals, except those few which precisely terminate the concords, are called discords. There is, notwithstanding, what is termed the *harmony of discords*, wherein the discords are made use of as the solid and substantial part of the harmony; for by a proper interposition of a discord, the succeeding concords receive an additional grace.

DIS'COUNT, in commerce, an allowance made on a bill or any other debt not yet become due, in consideration of immediate payment: or any deduction from the customary price. The discounts at banking establishments are usually the amount of legal interest paid by the borrower, and deducted from the sum borrowed, at the commencement of the credit. Five per cent, or 100 shillings per cent per annum, is one shilling, or twelve pence, per pound, for twelve months; or one penny per pound per month. This is the usual method, but still it is inaccurate. The true discount for any given sum for any given time, is such a sum as will in that time amount to the interest of the sum to be discounted: the proper discount therefore to be received for the immediate advance of 100*l.* due twelve months hence is not 5*l.*, but 4*l.* 15*s.* 2½*d.*, for this sum will, at tne end of the year, amount to 5*l.* which is what the 100*l.* would have produced.

DISCOV'ERY, in a general sense, that which is discovered, found out, or revealed; as, the discovery of America by Columbus; or the properties of the magnet were an important discovery.——*Discovery*, in law, the disclosing or revealing anything by a defendant in his answer to a bill filed against him in a court of equity.

DISCRE'TIVE, in logic, an epithet applied to a proposition expressing some distinction, opposition, or variety, by means of *but*, *though*, *yet*, &c.; as, men change their dresses, *but* not their inclinations.

DISCUM'BENCY, the act of leaning at meals, according to the manner of the ancients.

DIS'CUS, in antiquity, a quoit made of stone, iron, or copper, five or six fingers broad, and more than a foot long, inclining to an oval figure, which they hurled in the manner of a bowl, to a vast distance, by the help of a leathern thong tied round the person's hand who threw it, and put through a hole in the middle.

DISCUS'SIVE, in medicine, having the power to discuss or disperse tumours or coagulated matter.

DISCU'TIENT, a medicine or application which disperses any coagulated fluid or tumour.

DISE'ASE, any state of a living body in which the natural functions of the organs are interrupted or disturbed, either by defective or preternatural action. A disease may affect the whole body, or a particular limb or part of the body; and such partial affection of the body is called a *local* or *topical* disease.

DISEMBO'GUING, a term applied to rivers which discharge themselves into the sea.

DISFRAN'CHISE, to deprive of chartered rights and immunities; or to deprive of some franchise, as the right of voting in elections, &c.

DISINFEC'TION, in medicine, purification from infected matter.

DISINTEGRA'TION, in chemistry, the act of separating *integrant* parts of a substance, as distinguished from decomposition or the separation of *constituent* parts.

DISJUNCTIVE, in grammar, an epithet for conjunctions, which unite sentences, but separate the sense, as *but, nor*, &c.——A *disjunctive proposition*, in logic, is one in which the parts are opposed to each other by means of disjunctives; as, "it is either day or night."——A *disjunctive syllogism*, is, when the major proposition is disjunctive; as, "the earth moves in a circle, or an ellipsis; but it does not move in a circle, therefore it moves in an ellipsis."

DISLOCA'TION, in geology, the displacement of parts of rocks, or portions of strata, from the situations which they originally occupied.

DISMEM'BERED, in heraldry, an epithet for birds that have neither feet nor legs; and also to lions and other animals whose members are separated.

DISMOUNT'ING, in the military art, the act of unhorsing. Thus to dismount the cavalry, is to make them alight.——*To dismount cannon*, is to remove artillery from their carriages; or to break the carriages or wheels, so as to render the guns useless.

DISOR'DER, in the medical art, generally denotes any slight disease, but it may also mean a serious interruption of the functions of the animal economy.——It has likewise a very extended signification for confusion or irregularity; as, "the troops were thrown into disorder;" "the papers are lying about in sad disorder."

DISOX'YDATE, in chemistry, to reduce from the state of an oxyde, by disengaging oxygen from a mineral or other substance. Hence we have *disoxydation* and *disoxygenation*, for the act of separating oxygen from any substance containing it.

DISPATCH'ES, in politics, a packet of letters sent by a public officer on some affair of state or public business.

DISPENSA'TION, in ecclesiastical affairs, the granting of a license, or the license itself, to do what is forbidden by laws or canons, or to omit something which is commanded. Also, a system of principles and rites enjoined: as the *Mosaic dispensation*, that is, the Levitical law and rites; the *Gospel dispensation*, or scheme of human redemption by Jesus Christ.

DISPEN'SATORY, or PHARMACOPŒ'IA, an authorized volume containing directions for compounding medicines.

DISPERM'OUS, in botany, an epithet for plants which contain only two seeds.

DISPER'SION, in optics, the separation of the different coloured rays, in refraction, arising from their different refrangibilities.——In medicine, the removing of inflammation from a part, and restoring it to its healthy state.

DISPLAY'ED, in heraldry, is understood of the position of an eagle, or any other bird, when it is erect, with its wings expanded or spread forth.

DISPLU'ME, to deprive of plumage; and, figuratively, to strip off badges of honour, or degrade from rank and office.

DISPOSI''TION, a word of extensive application, very generally signifying method, distribution, arrangement, or inclination. Thus we speak of the *disposition* of the several parts of an edifice; the *disposition* of the infantry and cavalry in an army; the judicious *disposition* of a person's effects; a *disposition* in plants to grow upwards; a *disposition* in animal bodies to putrefaction; a person's *disposition* to undertake particular work, &c.

DISPUTA'TION, in the schools, a contest, either by words or writing, on some point of learning for a degree, prize, or for an exercise. Also a verbal controversy respecting the truth of some fact, opinion, or argument; as, Paul *disputed* with the Jews in the synagogue.

DISQUALIFICA'TION, that which incapacitates in law; implying a previous qualification, which has been forfeited; and not merely the want of qualification.

DISQUISI''TION, formal or systematic examination into the circumstances of any affair, in order to discourse about it, and so arrive at the truth.

DISRUP'TION, in geology, a term applied to the violent separation of rocks or a stratum of earth, as by an earthquake.

DISSEC'TION, the dividing an animal body into its substantial parts, for the purpose of examining its structures and uses. Le Gendre observes, that the dissection of a human body, even dead, was held a sacrilege till the time of Francis I.; and that he has seen a consultation held by the divines of Salamanca, at the request of Charles V. to settle the question whether or not it were lawful in point of conscience to dissect a human body for the purposes of anatomical science.

DISSE'ISIN, or DISSE'IZIN, in law, an illegal seizure of a person's lands, tenements, or other incorporeal rights. The person dispossessing is called the *disseisor*, and the person dispossessed, the *disseisee*.

DISSENT'ER, one who separates from the service and worship of any established church. In England, therefore, the word is particularly applied to those who do not conform to the rites and service of its church as by law established. The principles on which Dissenters separate from the church of England, are, the right of private judgment, and liberty of conscience. They maintain that Christ, and he alone, is the head of the church, and that they bow to no authority, in matters of religion, but that which proceeds from him.

DISSIPA'TION, in physics, the insensible loss or waste of the minute parts of a body, which fly off, by which means the body is diminished, or consumed.——The common acceptation of the word denotes an irregular, careless, and vicious course of life.

DISSOLV'ENT, in chemistry, a *menstruum*, or any thing which has the power of melting, or converting a solid substance into a fluid; as, water is a *dissolvent* of salts.——In medicine, a *solvent*, or any remedy supposed capable of dissolving calculi or other concretions in the body.

DIS'SONANCE, in music, unharmonious or discordant sounds.

"THE POSITION OF ROCKS, OFTEN LEANING OR PROSTRATE, SHEWS THAT THEY HAD SOME DISLOCATION FROM THEIR NATURAL SITE."—BURNET.

"THERE ARE MANY OPINIONS IN WHICH MULTITUDES OF MEN DISSENT FROM US, WHO ARE AS GOOD AND WISE AS OURSELVES."—ADDISON.

DISSYL'LABLE, in grammar, a word consisting of two syllables only; as, *kingdom, virtue.*

DISSOLU'TION, the separation of a body into its elementary principles; or a cessation of the powers by which it was held together. We speak of the *dissolution* of animal bodies, when the parts separate by putrefaction; and of the reduction of a substance into its smallest parts, by a dissolvent or menstruum. We also say, the *dissolution* of the world, when we refer to its final destruction; and the *dissolution* of government, when it can no longer hold together.

DIS'TAFF, the staff of a spinning-wheel, to which a bunch of flax is tied, and from which the thread is drawn.

DISTANCE, in astronomy is either apparent, real, or relative. *Apparent distances* are such as are judged of by the eye; *relative distances* are deduced from the theory of gravity: and *real distances*, from the parallel, relative distances, &c. ——*Line of Distance*, in perspective, a right line drawn from the eye to the principal point; the *point of distance* being a point in the horizontal line at such a distance from the principal point, as is that of the eye from the same.——*Distance*, as applied to the turf, is a length of 240 yards from the winning-post of a race-course: precisely at which spot is fixed a post corresponding with others, but having a gallery capable of holding three or four persons, which is called the *distance-post*. In this gallery as well as in that of the winning post, before the horses start each heat, a person is stationed holding a crimson flag; during the time the horses are running, each flag is suspended from the front of the gallery to which it belongs, and inclined forward as a horse passes either post. If there happen to be any horse which has not come up to the distance-post, before the first horse in that heat has reached the winning-post, such horse is said to be "distanced," and is thereby disqualified for running any more during that race.

DISTEM'PER, in the veterinary art, a disease incident to dogs, horses, and other domestic animals.——In painting, the mixing of colours with something besides oil and water. When colours are mixed with size, whites of eggs, &c. but not with oil, it is said to be done in *distemper.*

DIS'TICH, a couplet, or couple of verses in poetry, making complete sense.

DISTILLATION, the operation of extracting spirit from a substance, by drawing out its humid, spirituous, oleaginous, or saline parts, by means of heat, these parts being first resolved into a gas or vapour, and then recondensed into a fluid, by means of an alembic or still. In the preparations of the original compound, and in the management of the results, consists the art of a distiller. As an introduction to an elaborate practical treatise under this head, in Dr. Ure's Dictionary of Arts, &c. are the following pertinent remarks:—"In the commercial language of this country, *distillation* means the manufacture of intoxicating spirits; under which are comprehended the four processes, of *mashing* the vegetable materials, *cooling* the worts, exciting the vinous *fermentation*, and separating by a peculiar vessel called a *still*, the alcohol combined with more or less water. This art of evoking the fiery demon of drunkenness from his attempered state in wine and beer, was unknown to the ancient Greeks and Romans. It seems to have been invented by the barbarians of the north of Europe, as a solace to their cold and humid clime; and was first made known to the southern nations in the writings of Arnoldus de Villa Nova, and his pupil, Raymond Lully of Majorca, who declares this admirable essence of wine to be an emanation of the Divinity, an element newly revealed to man, but hid from antiquity, because the human race were then too young to need this beverage, destined to revive the energies of modern decrepitude. He further imagined that the discovery of this *aqua vitæ*, as it was called, indicated the approaching consummation of all things—the end of this world. However much he erred as to the value of this remarkable essence, he truly predicted its vast influence upon humanity, since to both civilized and savage nations it has realized greater ills than were threatened in the fabled box of Pandora."—The article concludes with the following astounding statement respecting the consumption of whiskey:—"In the year 1831, 23,000,000 gallons of spirits were made in the United Kingdom, equivalent to the consumption of 1,500,000 quarters of grain, and for that year and the four preceding years, there were imported annually 2,000,000 of quarters of foreign barley.—In 1832, 20,778,521 gallons paid excise duty. In 1834, 23,397,806. In 1836, 27,137,000; of which 14,000,000 were Irish. We may add to the last quantity, three millions of gallons at least on the score of smuggling, in licensed and illicit distilleries; making 30 millions to be the frightful amount of whiskey consumed by the British people, independent of other intoxicating liquors!

DISTRESS', in law, the *distraining* or seizing upon a person's goods for the payment of rent or taxes, &c.

DISTRIBU'TION, the act of dividing or separating; as, the distribution of property among children; or the distribution of plants into genera and species.——In logic, the distinguishing a whole into its several constituent parts.——In medicine, the circulation of the chyle with the blood——In architecture, the dividing and disposing of the several parts of a building, according to some plan, or to the rules of the art.——In printing, the taking a form asunder, so as to separate the types, and place each letter in its proper cell or box in the cases.——*Distributive Justice*, implies, that justice is so administered by a judge, as to give every man his due.——*Distributive*, in grammar, words which serve to distribute things

DISTANT OBJECTS IN A PROSPECT APPEAR BLUE, OWING TO THEIR BEING TINTED BY THE DEEPENING HUES OF THE ATMOSPHERE.

OWING TO THE SPHERICAL FORM OF THE EARTH, A MAN STANDING ON LEVEL GROUND CAN SEE ONLY ABOUT THREE MILES DISTANT.

into their several orders, as *each, either, every*, &c.

DISTINC'TION, in a general sense, means the act of separating or distinguishing. It also denotes elevation of rank or character. Thus we say, of men who hold a high rank by birth or office, as well as of those who are eminent for their talents, services, or moral worth, that they are persons of *distinction*.——*Metaphysical Distinction* is the non-agreement of being, whereby *this* entity is not *that*, or one thing is not another.——*Distinction*, or *distinguo*, is also used, in the schools, as an expedient to evade an argument, or to clear up and unfold an ambiguous proposition, which may be true in one sense, and false in another: thus they say, "the respondent was hard pressed, but he disengaged himself by a *distinguo*."

DIS'TRICT, a word applicable to any portion of land or country, or to any part of a city or town, which is defined by law or agreement. A governor, a prefect, or a judge may have his *district;* or states and provinces may be divided into *districts* for public meetings, the exercise of elective rights, &c.——*District*, in law, that circuit or territory within which a man may be forced to make his appearance.

DISTRIN'GAS, in law, a writ commanding the sheriff, or other officer, to distrain a person for debt, or for his appearance at a certain day.

DITHYRAM'BUS, a sort of hymn anciently sung in honour of Bacchus, full of transport and poetical rage: any poem written with wildness. The *dithyrambic poetry* was very bold and irregular, for the poets not only took the liberty to coin new words for the purpose, but made double and compound words, which contributed very much to the wild magnificence of this kind of composition.

DI'TONE, in music, an interval comprehending two tones. The proportion of the sounds that form the ditone is 4 : 5, and that of the semi-ditone, 5 : 6.

DITRIHE'DRIA, in mineralogy, a genus of spars with six sides or planes; being formed of two trigonal pyramids joined base to base, without an intermediate column.

DITTAN'DER, or PEPPER-WORT, in botany, *Lepidium*, a genus of plants of many species. The common dittander has a hot biting taste, and is sometimes used in lieu of pepper.

DITTANY (white), in botany, an aromatic plant of the genus *Dictamnus*. Its leaves are covered with a white down, and when fresh they yield an essential oil. Bastard dittany is a species of *Marrubium*.

DIT'TO, contracted into *Do.* in books of accounts, is from the Italian *detto*, and signifies "the aforesaid." It is used to avoid repetition.

DIURET'ICS, medicines which have the power to promote or increase the discharge of urine.

DIVAN', a council-chamber, or court in which justice is administered, in the eastern nations, particularly among the Turks. There are two sorts of divans, that of the grand seignior, called the council of state, which consists of seven of the principal officers of the empire; and that of the grand vizir, composed of six other vizirs or counsellors of state, the chancellor, and secretaries of state for the distribution of justice.——The word *divan*, in Turkey, also denotes a kind of stage, which is found in all the halls of the palaces, as well as in the apartments of private persons. It is covered with costly tapestry, and a number of embroidered cushions leaning against the wall; and on it the master of the house reclines when he receives visitors. From this, a kind of sofa has obtained the name of divan.

DIVAR'ICATE, in botany, an epithet for a branch which spreads out wide, or forms an obtuse angle with the stem. It is also applied to peduncles and petioles.

DIVER'GENT, or *Diver'ging lines*, in geometry, are those which constantly recede from each other.——*Divergent rays*, in optics, those rays which, going from a point of the visible object, are dispersed, and continually depart one from another, in proportion as they are removed from the object: in which sense it is opposed to *convergent*. Concave glasses render the rays divergent, and convex ones convergent.——*Diverging series*, in mathematics, a series the terms of which always become larger the farther they are continued.

DIVER'SION, in military tactics, an attack on an enemy, by making a movement towards a point that is weak and undefended, in order to draw his forces off from continuing operations in another quarter.

DIV'IDEND, the part or proportion of profits which the members of a society, or public company, receive at stated periods, according to the share they possess in the capital or common stock of the concern. The term is applied also to the annual interest paid by government on various public debts. In this sense, the order by which stockholders receive their interest is called a *dividend warrant*, and the portions of interest unreceived are denominated *unclaimed dividends*. It also signifies the sum a creditor receives from a bankrupt's estate.——*Dividend*, in arithmetic, the number to be divided into equal parts.

DI'VING, the art of descending under water to a considerable depth, and remaining there for a length of time, as occasion may require. The practice of diving is resorted to for the recovery of things that are sunk, &c.——The most remarkable diver was Nicolo Pesce, who, according to the account given by Kircher, was able to spend five days together in the waves, without any other provisions than the fish which he caught and ate raw. He would swim from Sicily to Calabria, carrying letters from the king. At length he met his fate in exploring the depths of Charybdis, at the instance of the king; who, after he had once succeeded in fetching up a golden cup that had been thrown in, ordered him to repeat the experiment.

DIVING-BELLS ARE RESTRICTED IN THEIR DESCENT TO ABOUT TWELVE FATHOMS, THE HEAT AND DENSITY OF THE AIR BECOMING INSUPPORTABLE.

A DIVING-BELL ON AN IMPROVED PRINCIPLE, WAS CONSTRUCTED IN 1812, BY THE LATE MR. RENNIE, AND EMPLOYED IN RAMSGATE HARBOUR.

DIVING-BELL, a mechanical contrivance by which persons may descend below the water and remain for some time without inconvenience. It is most commonly made in the form of a truncated cone, the smallest end being closed, and the large one open; and is used for the recovery of property that is sunk in wrecks. Of late years it has also been much employed to assist in laying the foundations of buildings under water. To illustrate the principle of this machine, take a glass tumbler, and plunge it into water with the mouth downwards; you will find that very little water will rise into the tumbler, which will be evident if you lay a piece of cork upon the surface of the water, for its upper side will be perfectly dry, the air which was in the tumbler having prevented the entrance of the water: but, as air is compressible, it could not entirely exclude the water, which by its pressure condensed the air a little.——Within these few years an ingenious diving apparatus has been invented by Mr. Deane, and successfully employed on many occasions. In fact, at the very time we are preparing this article, it would appear to be in use for the purpose of recovering the guns, &c. belonging to the wreck of the Royal George, at Spithead. In this apparatus the head of the diver is covered by a helmet of thin sheet copper, large enough to admit of the easy motion of the head, and capable of containing from six to eight gallons of air. The helmet comes pretty far down on the breast and back, and has in front three eye holes, covered with glass, protected by brass wires. The copper helmet is attached to a waterproof canvas jacket by means of rivets, so tightly fixed that no water can be introduced to the body of the diver. The junction of the helmet and jacket is stuffed, so that it may clasp the shoulders of the diver firmly. A leather belt passes round the neck, to which are attached two weights, one before and the other behind, each weighing about 40lbs., in order that the diver may descend with facility; but in case of any accident occurring when he is at the bottom, the belt is fastened with a buckle in front, which he can instantly unfasten, and rise to the surface after the dropping of the weights. The diver is supported with fresh air by means of a flexible waterproof pipe, which enters the back of the helmet, and communicates with an air-pump wrought above in the vessel from which the diver descends. From the back part of the helmet there is likewise led an eduction pipe, to allow the escape of the breathed air. In order that the diver may give notice to the attendants at the top, when he requires a hook, tackle, bucket, or any difference in the supply of fresh air, he is furnished with a signal line, which passes under his right arm. The diver descends from the side of the vessel either by means of a rope or wooden ladder loaded at the lower end, (but more frequently by the former). When he descends to the bottom, the rope is let down, so that it becomes slack, to prevent the motion of the vessel from obstructing him, and he carries a line in his hand, that he may, when necessary, return to the rope. In order that the diver may be as comfortable as possible under water, he puts on two suits of flannel, above which he has a complete dress of Mackintosh's waterproof cloth, which entirely covers his body, the only apertures being at the neck and wrists. The diver is thus enabled to remain several hours at a time under water, all the while perfectly dry, his motion being rendered quite steady by heavy weights attached to his shoes.—Our readers, perhaps, will not think it an inappropriate conclusion to this article, if we transcribe an account of the method adopted by Colonel Pasley, the engineer now employed in removing the wreck of the Royal George. "On Monday, Sept. 23d, 1839, a cylinder, containing 2320 lbs. of powder, having been lowered, was placed in a situation which the divers supposed would be effectual on the most compact portions of the wreck. The operation being completed, the vessel in which the voltaic battery was placed, was drawn off to the distance of 500 feet, which is the length of the connecting wires, and instantaneously on the circuit being completed the explosion took place, with very remarkable effects. At first the surface of the sea was violently agitated by a sort of tremulous motion, which threw it into small irregular waves, a few inches only in height. This lasted three or four seconds, when a huge dome of water made its appearance, of a conical or rather beehive shape. At first it appeared to rise slowly, but rapidly increased in height and size till it reached the altitude of 28 or 30 feet, in a tolerably compact mass: it then fell down, and produced a series of rings, which spread in all directions; the first, or outer one, having the aspect of a wave several feet in height, curled and broke, as if it had been driven towards the shore. Neither the shock nor the sound was so great as had been expected by those who witnessed the former explosions, where the quantity of powder was only 45lbs.; but the effect produced on the water at the surface, considering that the depth was 90 feet, was truly astonishing. By this experiment, Colonel Pasley has established the practicability of applying the voltaic battery to submarine purposes, and the certainty of exploding a charge at any depth of water. The effect on the wreck will not be fully ascertained till the present spring tides are over, and the long periods of slack water at the neaps enable the divers to remain upwards of an hour under water. Two large guns and a quantity of timber, however, have been recovered since the explosion, and landed at the dock-yard; and the gallant Colonel now feels convinced that this obstruction to the anchorage at Spithead, which has remained 57 years, will ultimately be removed." We are enabled to add, that repeated submarine explosions were subsequently made with similar success.

DIVINA'TION, the pretended art of foretelling future events, or such as cannot be obtained by ordinary or natural means. The Israelites were always very fond of divination, magic, and interpretation of dreams. It was to cure them of this foolish propensity, that Moses promised them, from God, that the spirit of real prophecy should not depart from amongst them; forbad them to consult diviners, astrologers, &c., under very severe penalties; and ordered those to be stoned who pretended to have familiar spirits, or the spirit of divination.—The ancient heathen philosophers divided divination into two kinds, *natural* and *artificial*. Natural divination was supposed to be effected by a kind of inspiration or divine afflatus; artificial divination was effected by certain rites, experiments, or observations, which we have explained under their respective heads. All the ancient Asiatic tribes had modes of divination: the Egyptians and Greeks had their oracles; and, with the Romans, divination and witchcraft were brought into a kind of system, and constituted part of their religion. In truth, there has hardly been a nation discovered, which had advanced beyond the lowest barbarism, that did not practise some kinds of divination; and even in the ages in which reason has most prevailed over feeling, the belief in the power of foreseeing future events has been entertained. At the present day, enlightened as the world is by science, the desire of prying into futurity keeps alive many modes of prognosticating future events; nor is the practice, we believe, entirely confined to the ignorant and superstitious.

DIVIN'ITY, a term applied to the Deity or Supreme Being. It also denotes theology; the science which unfolds the character of God, his laws and moral government, the duties of man, and the way of salvation.

DIVISIBIL'ITY, that property by which the particles of matter in all bodies are capable of separation, or disunion from one another. As it is evident that body is extended, so it is no less evident that it is divisible; for since no two particles of matter can exist in the same place, it follows that they are really distinct from each other, which is all that is meant by being divisible. In this sense the least conceivable particle must still be divisible, since it will consist of parts which will be really distinct. Thus far extension may be divided into an unlimited number of parts, but with respect to the limits of the divisibility we are still in the dark. We can, indeed, divide certain bodies into surprisingly fine and numerous particles, and the works of nature offer many fluids and solids of wonderful tenuity; but both our efforts, and those naturally small objects, advance a very short way towards infinity. Ignorant of the intimate nature of matter, we cannot assert whether it may be capable of infinite division, or whether it ultimately consists of particles of a certain size. The atoms which produce light, and still enable us to discriminate their actions in varied colours; those which produce odours; those of the gaseous elements; and those of magnetic phenomena, &c. baffle description, and leave us in a state of indescribable astonishment. The *actual* subdivision of bodies has, in many cases, been carried to a prodigious extent. The trituration and levigation of powders, and the perennial abrasion and waste of the surface of solid bodies, occasion a disintegration of particles, almost exceeding the powers of computation. The solutions of certain saline bodies, and of other coloured substances, exhibit a prodigious subdivision and dissemination of matter. A single grain of the sulphate of copper, or blue vitriol, will communicate a fine azure tint to five gallons of water. In this case the copper must be attenuated at least ten million times; yet each drop of the liquid may contain as many coloured particles, distinguishable by our unassisted vision. A still minuter portion of cochineal, dissolved in deliquiate potash, will strike a bright purple colour through an equal mass of water. Animated matter likewise exhibits, in many instances, a wonderful subdivision. The milt of a cod fish, when it begins to putrify, has been computed to contain a billion of perfect insects; so that thousands of these living creatures could be lifted on the point of a needle. But the infusory animalcules display, in their structure and functions, the most transcendant attenuation of matter. Of the *monas gelatinosa*, discovered in ditch water, millions appear in the field of a microscope, playing, like the sunbeams, in a single drop of liquid; yet each animalcule must consist of parts connected with each other, with vessels, with fluids, and with organs necessary for its motions, &c. How inconceivably small must these organs be! and yet they are, unquestionably, composed of other parts still smaller, and still farther removed from the perception of our senses.

DIVIS'ION, the act of dividing or separating any entire bodies into parts.——*Division*, in arithmetic, one of the four fundamental rules, by which we find how often a less number, called the *divisor*, is contained in a greater, called the *dividend*; the number of times which the divisor is contained in the dividend being termed the *quotient*.——*Division*, in music, the dividing the interval of an octave into a number of less intervals. The fourth and fifth divide the octave perfectly, though differently: when the fifth is below, and serves as a bass to the fourth, the division is called *harmonical*; but when the fourth is below, it is called *arithmetical*.——*Division*, among logicians, is the explication of a complex idea, by enumerating the simple ideas whereof it is composed.——In rhetoric, it is the arrangement of a discourse under several heads.——A part of an army, as a brigade, a squadron, or platoon.——A part of a fleet, or a select number of ships under a commander, and distinguished by a particular flag or standard.

DIVO'RCE, a separation, by law, of husband and wife; and is either a divorce *a vinculo matrimonii*, that is, a complete dissolution of the marriage bonds, whereby the parties become as entirely disconnected as those who have not been joined in wedlock, or a divorce *a mensâ et thoro* (from bed and board), whereby the parties are legally separated, but not unmarried. Divorces *a vinculo* are decreed by the ecclesiastical courts in England, for prior contract, too near an affinity, or consanguinity, and other causes, existing at the time of the marriage, but not for any subsequent cause. For any cause whatever, arising after the marriage, the ecclesiastical courts can only decree divorce *a mensâ et thoro*, which does not leave either of the parties to marry again.

DIURE'TICS, medicines which promote the urinary discharge.

DIUR'NAL ARCH, in astronomy, the arch or number of degrees that the sun, moon, or stars describe between their rising and setting.——*The diurnal motion of a planet*, is so many degrees and minutes as any planet moves in twenty-four hours.

DOCIM'ACY, or the DOCIMAS'TIC ART, the art of assaying metals, or separating them from foreign matters, and determining the nature and quantity of metallic substance contained in any ore or mineral. The metal is rarely found in a pure state; and when combined with non-metallic substances, its distinctive characters are so altered, that it often requires much skill and experience to recognize its nature, or to decide if it can be smelted with advantage. The assayer, therefore, triturates it to an impalpable powder, and then subjects it to the decomposing action of powerful chemical reagents. Sometimes with the aid of alkalies or salts appropriate to its nature, he employs the dry way by fire alone; at others the solvent power of acids is made to effect what fire alone is incapable of effecting: the usual preliminary test, however, is the blow-pipe.

DOCIMA'SIA, in Greek antiquity, a probation of the magistrates and persons employed in public business at Athens. It was performed publicly in the forum, where they were obliged to give account of themselves and their past life before certain judges.

DOCKS. By the word dock was formerly understood a slip or excavation made for the purpose of building or repairing a vessel. When furnished with flood-gates to prevent the influx of the tide, if required, it was called a *dry dock;* and when, having no flood-gates, the vessel could only be cleaned or repaired during the period in which the tide left her accessible, it was called a *wet-dock*. Both these docks are still used; but the name of *graving* or *building dock* is now more generally given to what we have termed *dry dock*, which latter term is applied to those docks or basins left dry by the tide; while the appellation *slip* is confined to the narrow inlet for building or repairing, unprotected by gates. Most seaport towns are provided with graving docks for the repairing of ships; but it is only in the British islands that the system has been carried to any extent of forming large basins or floating docks, furnished with flood-gates for the reception of shipping to load and unload, wherein the vessel remains safe at the quay side. That these floating docks were a great desideratum, and have contributed much towards our commercial prosperity, no one can doubt who considers the inconvenience, danger, and delay caused by loading and unloading vessels in a tide-river or in a harbour not entirely land-locked. Mr. McCulloch observes, that "notwithstanding the obvious utility of wet docks, and the vast trade of the metropolis, there was no establishment of this sort on the Thames till nearly a century after a wet dock had been constructed at Liverpool. The inconvenience arising from the crowded state of the river, at the periods when fleets of merchantmen were accustomed to arrive, the insufficient accommodation afforded by the legal quays and sufferance wharfs, the necessity under which many ships were placed of unloading in the river into lighters, and the insecurity and loss of property thence arising, had been long felt as almost intolerable grievances; but so powerful was the opposition to any change, made by the private wharfingers and others interested in the support of the existing order of things, that it was not till 1793 that a plan was projected for making wet docks for the port of London; and six years more elapsed before the act for the construction of the West India Docks was passed." To give the reader an idea of the extent of these docks, and their commercial importance, it will be sufficient to state, that the docks, with their basins, and the locks which connect them with the river, present an area of 68 acres of ground, excavated for the reception and moorage of vessels. The total superficies, including that of the quays and warehouses, is 140 acres. It can admit at the same time 204 vessels in the import, and 195 in the export dock, forming a total of 120,000 tons. Upon the quays, under the sheds, and in the warehouses, there have been deposited, at the same time, 148,563 casks of sugar, 433,648 bags of coffee, 35,158 pipes of rum and Madeira wine, 14,021 logs of mahogany, 31,350 tons of logwood, and a variety of other articles. There are also the East India Docks, the London Docks, and St. Katherine's Docks, each of which, though inferior in size to the West India Docks, are magnificent works. Forty years ago nearly the whole of the vessels that entered the port of London were obliged to remain moored in the open stream of the Thames!

DOCK'ET, in law, signifies a brief in writing. The rolls of judgment, when brought into the court of common-pleas, are entered on the docket of that term: and attorneys keep docket-books, wherein they enter judgments.

WHEN A MINE YIELDS NATIVE METAL, OR ITS OXYDE, NO FURTHER PROCESS BEYOND THAT OF PICKING AND FUSING IS NECESSARY.

THE TWENTY-TWO DOCKS OF LIVERPOOL COVER 111 ACRES, AND THE QUAY SPACES AROUND THEM ARE EIGHT MILES: THEY COST ABOVE TWO MILLIONS.

THE DOG IS THE NATURAL ALLY OF MAN, AND THE ONLY ANIMAL WHICH HAS FOLLOWED HIM THROUGH EVERY REGION OF THE EARTH.

DOGS PUT OUT THEIR TONGUES WHEN HOT, BECAUSE THEY HAVE NO OTHER MEANS OF INCREASING THE EVAPORATION FROM THEIR BODIES.

DOCK-YARDS, an arsenal containing all sorts of naval stores, and timber for ship-building. In England, the royal dock-yards are at Chatham, Portsmouth, Plymouth, Deptford, Woolwich, and Sheerness, where her Majesty's ships and vessels of war are generally moored during peace, and such as want repairing are taken into the docks and refitted.

DOC'TOR, a person who has passed all the degrees of a faculty, and is empowered to practise and teach it; or, according to modern usage, one who has received the highest degree in a faculty. The title of *doctor* originated at the same time with the establishment of universities; and is either conferred publicly, with certain ceremonies, or by diploma.

DOCTRINAIRES, a party in the French chamber of deputies, on the second restoration of the Bourbons, who would neither rank themselves among the friends of absolute power, nor among the defenders of the revolution. They opposed the ultra royalists, and took a middle course, avowing themselves the supporters of a constitutional monarchy.

DOC'TRINE, a principle or position in any science, that is laid on as true by an instructor therein. Thus, the *doctrines* of the Gospel are the principles or truths taught by Christ and his Apostles. But *any* tenet or opinion is a doctrine; therefore doctrines may be either true or false.

DOC'UMENT, any official or authoritative paper, containing written instructions, or evidence.

DOD'DER, in botany, a parasitical plant of the genus *Cuscuta*. It attaches itself to hops, flax, nettles, &c., and as it decays at the root, is nourished by the plant that supports it by means of little vesicles which adhere to the stalk.

DODECAGYN'IAN, in botany, an epithet for plants having twelve pistils.

DODECATEM'ORY, in astronomy, a term sometimes applied to each of the twelve signs of the zodiac.

DO'DO, in ornithology, the Didus, a genus of fowls of the gallinaceous order. The *hooded dodo* is larger than a swan, with a strong hooked bill, and the head appearing as if covered with a hood. The *solitary dodo* is a very large fowl, sometimes weighing between 40 and 50lbs.

DODEC'AGON, a regular polygon of 12 equal sides and angles.

DODECAHE'DRON, in geometry, a solid bounded by twelve equal and equilateral pentagons.

DODECAN'DRIA, the 12th class of the Linnæan system of botany, comprehending those plants which have flowers with twelve stamens and upwards, as far as nineteen inclusive, as dyer's weed, purslane, houseleek, &c. The essential character is, that the stamens, however numerous, are inserted into the receptacle.

DODO'NIAN, in antiquity, an epithet given to Jupiter, because he was worshipped in a temple built in the forest of Dodona, where was the most celebrated, and, it is said, the most ancient oracle in Greece.

DOG, *(Canis familiaris)*, an animal well known for his attachment to mankind, his incorruptible fidelity, and his inexhaustible diligence, ardour, and affection. But when we thus describe this faithful animal, we mean those only which man has domesticated. In his wild state the dog is a beast of prey, of the wolf kind, clearing the earth of carrion, and living in friendship with the vulture. By Mahometans and Hindoos the dog is regarded as impure, and neither will touch one without an ablution; they are therefore unappropriated, and prowl about the towns and villages, devouring the offal, and thus performing the office of scavengers. Tamed and educated by man, the numerous good qualities of dogs have claimed and received the tribute of universal praise. Their sensibility is extreme: witness their susceptibility of the slightest rebuke, and restless anxiety to be restored to favour. Uninfluenced by changes of time and place, these animals seem to remember only the benefits they may have received, and, instead of showing resentment, will lick the hand from which they have received the severest chastisement. The skill of several species in the chase, where they act as the purveyors of man; their domestic habits; their kindness to children; in a word, their general congeniality with man himself, have, in all ages, recommended them to his use and care. When we attempt to trace the source or origin of the species, it will be found that the changes and varieties, which the influence of domestication and the intermixture of races have produced, are so multifarious and interminable as to baffle all research. Pennant is of opinion, that the original stock of dogs in the old world is derived from the jackall; that from their tamed offspring, casually crossed with the wolf, the fox, and the hyæna, have arisen the numberless forms and sizes of the canine race. Buffon, on the contrary, considers the shepherd's dog as the parent stock whence all the species of the canine race have sprung; and that naturalist corroborates his idea by observing that they appear originally disposed, independently of education or habit, to take care of herds. Zoologists reckon twenty-three canine *species*, among which are included the wolf, the hyæna, the jackall, and the fox. The *varieties* of dogs are almost without end. Of the *faithful dog*, alone, there are thirty-five varieties, and numerous sub-varieties. The mastiff, as peculiar to England, is called the *English dog*. Among many nations dogs form an important article of food. In China, the Society Islands, &c., young puppies are considered a great delicacy; and we learn from the writings of Hippocrates, that in his day the flesh of a grown dog was esteemed wholesome and nourishing.

DOG'BANE, in botany, the *Apocynum Androsæmifolium* of Linnæus, a perennial North American plant, the root of which is intensely bitter and nauseous, and is em-

THE REASON ASSIGNED FOR THE SURVEY TAKEN BY WILLIAM THE CONQUEROR, WAS THAT EVERY MAN SHOULD BE SATISFIED WITH HIS OWN RIGHT.

ployed, in the form of a powder, for the same purposes as ipecacuanha.

DOG-DAYS, the period between the 24th of July and the 24th of August; so called because the dog-star (Sirius) during this period rises with the sun; and the heat, which is usually most oppressive at this season, was formerly ascribed to the conjunction of this star with the solar luminary.

DOG-FISH, in ichthyology, the popular name of several of the genus *Squalus*, or shark. In their general character they differ but little from the other sub-genera of the great shark family, so well known for their ferocious habits. Although dog-fishes are seldom, if ever, injurious to man, they commit great ravages in the fisheries by their voracity. The flesh of all the species is hard, dry, and unpalatable, requiring to be well soaked before it is eaten; but a considerable quantity of oil is obtained from the liver.

DOG'GEREL, an epithet given to a kind of loose, irregular, burlesque poetry, like that of Hudibras.

DOG'WOOD, in botany, *Cornus Florida*, a small tree growing in America, the wood of which is white, hard, and of a fine texture; much used by cabinet-makers for inlaying, &c., and considered little inferior to box. Its bark possesses properties very similar to the Peruvian bark, and is often used as a substitute for it.

DOGE, formerly the title of the chief magistrate in the republics of Venice and Genoa. The dignity was elective in both places: at Venice it continued for life; at Genoa, only for two years. His power became, by degrees, very limited.

DOG'GER, the name of a two-masted Dutch fishing vessel. In some of our old statutes, we meet with *dogger-men*, denoting the fishermen whose vessels were of this description.

DOG'MA, a principle, maxim, tenet, or settled opinion, particularly with regard to matters of faith and philosophy; as, the *dogmas* of the church; the *dogmas* of Aristotle.

DOG'MATISTS, a sect of ancient physicians, of which Hippocrates was the first. They are also called *logici*, or logicians, from their using the rules of logic on professional subjects. They laid down definitions and divisions, reducing diseases to certain genera, and those genera to species, and furnishing remedies for them all; supposing principles, drawing conclusions, and applying those principles and conclusions to the particular diseases under consideration.

DOG'-STAR, or SIR'IUS, a star of the greatest magnitude in the constellation *Canis*.

DOIT, the ancient Scottish penny-piece, twelve of which were equal to a penny sterling. Two of them were equal to the *bodle*, six to the *baubee*, and eight to the *acheson*.

DOLE, in our ancient customs, signified a part or portion of a meadow, where several persons had shares. It now means a distribution or dealing of alms, or a liberal gift made to the people or to some charitable institution.

DOL'MAN, a kind of long cassock, worn by the Turks, hanging down to the feet, with narrow sleeves buttoned at the wrist.

DO'LIUM, the name of a genus of shells, called by some *conchæglobosæ*.—— The *dolium* is a simple shell, without any hinge, formed of one continuous piece, which makes a body of a figure approaching to round, distended, and, as it were, inflated. The animal inhabiting it is a *limax*.

DOL'LAR, a silver coin of Spain and of the United States, of the value of 4s. 6d. sterling, or 100 cents. In Germany, the name *dollar* is given to several coins of different values.

DOL'OMITE, in mineralogy, a variety of magnesian carbonate of lime, so called from the French geologist Dolomieu. It occurs under considerably diversified aspects, constituting beds of very great extent, and abounding in the Appenines, the Tyrol, Switzerland, and Tuscany. It is of various shades of white; and both in Europe and America it is frequently employed as marble.

DOL'PHIN, (*delphinus*) in ichthyology, a genus of cetaceous fish. But that to which seamen give this name is the *Coryphæna hippuris* of Linnæus. The colour is a silvery white, with yellowish spots. It has a roundish snout and tapering body, with a fin running along the back from the head to the tail. Few fish are more agile, or swim with greater velocity.

DO'MESDAY, or DOOMS'DAY-BOOK, a book or record made by order of William the Conqueror, which now remains in the exchequer, and consists of two volumes, a large folio and a quarto; the former contains a survey of all the lands in most of the counties in England, and the latter comprehends some counties that were not then surveyed. The "Book of Domesday" was begun by five justices, assigned for that purpose in each county, in the year 1081, and finished in 1086. It was of such authority, that the Conqueror himself submitted, in some cases wherein he was concerned, to be determined by it. Camden calls it the Tax-book of king William; and it was farther called *Magna Rolla*. There is likewise a third domesday book, made by command of the Conqueror; and also a fourth, being an abridgment of the other books.

DOME, in architecture, a spherical roof, or cupola, raised over the middle of a building. Some of the greatest architects, both in this country and Italy, have given their particular attention to this branch of building.——The dome of St. Paul's, by Sir Christopher Wren, is considered as a master piece.

DOMIN'ICAL LETTER, in chronology, is that letter of the alphabet which points out in the calendar the Sundays throughout

DOMESDAY-BOOK IS KEPT IN THE CHAPTER-HOUSE AT WESTMINSTER, WHERE IT MAY BE CONSULTED ON PAYING A FEE OF 6s. 8d. TO THE PROPER OFFICERS.

the year, thence also called *Sunday letter*, or *Dies Domini*. The dominical letter may be found universally, for any year of any century, thus: Divide the centuries by 4, and take twice what remains from 6; then add the remainder to the odd years, above the even centuries, and their 4th. Divide their sum by 7, and the remainder taken from 7, will leave the number answering to the letter required.

DOMIN'ICANS, called also *Predicants*, or *Preaching Friars*, an order of monks, founded by St. Dominic, a native of Spain, in 1215. The design of their institution was, to preach the gospel, convert heretics, defend the faith, and propagate Christianity. They embraced the rule of St. Augustine, to which they added statutes and constitutions, which had formerly been observed either by the Carthusians or Præmonstratenses. The principal articles enjoined perpetual silence, abstinence from flesh at all times, wearing of woollen, rigorous poverty, and several other austerities. In France they were called *Jacobins*, because the first convent in Paris was in the *Rue St. Jaques*. The *Dominican Nuns*, who were established at the same time, follow similar rules.——A third establishment of St. Dominic was the military order of Christ, originally composed of knights and noblemen, whose duty it was to wage war against heretics. After the death of the founder, this became the order of the penitence of St. Dominic, for both sexes, and constituted the third order of Dominicans. These became extremely influential; and numbered among their fraternity some of the most distinguished scholars, such as Albertus Magnus and Thomas Aquinas. In course of time they were superseded in the schools and courts by the Jesuits; and the order at present flourishes only in Spain, Portugal, Sicily, and South America.

DOMICIL'IARY, pertaining to an abode or residence. Hence, a *domiciliary visit* signifies a visit to a private dwelling, particularly for the purpose of searching it, under authority.

DOM'INANT, in a general sense, predominant or governing; as the *dominant* party or faction.——In music, the dominant or sensible chord is that which is practised on the dominant of the tone, and which introduces a perfect cadence. Every perfect major chord becomes a dominant chord, as soon as the seventh minor is added to it.

DOM'IFYING, in astrology, a term, now nearly obsolete, for the dividing or distributing the heavens into twelve houses, in order to erect a theme, or horoscope, by means of six great circles, called circles of position.

DOMIN'ION, *(dominium)*, in the civil law, signifies the power to use or dispose of a thing as we please.——*Dominium plenum*, is when the property is united with the possession.——*Dominium nudum*, when there is the property without the possession. *Dominium* is again divided into that which is acquired by the law of nations, and that which is acquired by the civil law. The former can never be got without possession, the latter may. *Directum Dominium*, is the right alone of dominion. *Dominium utile*, the profit redounding from it. Thus the wife retains the *dominium directum* of her jointure, and the *dominium utile* passes to her husband.——In a general sense, *Dominion* signifies either sovereign authority, or territory within the limits of the authority of a prince or state; as, the British *dominions*.

DOM'INO, a masquerade dress, worn by gentlemen and ladies, consisting of a long silk mantle, with a cap and wide sleeves. It was formerly a dress worn by priests in the winter, which, reaching no lower than the shoulders, served to protect the face and head from the weather.——*Dominoes*, a game played by two or four persons, with twenty-eight pieces of ivory, called cards, and variously dotted after the manner of dice.

DOM'INUS, in the civil law, signifies one who possesses anything by right of purchase, gift, loan, legacy, inheritance, payment, contract, or sentence.——*Dominus*, in the feudal law, one who grants a part of his estate in fee to be enjoyed by another.

DO'MO REPARAN'DO, a writ which lies for a person against his neighbour, whose house he fears will fall to the damage of his own.

DON, a title of honour in Spain, answering to Dom., or Dominus Lord.

DONA'TION, in law, the act or contract by which a person transfers to another either the property or the use of something, as a free gift. In order to be valid, it supposes a capacity both in the donor and donee, and requires consent, acceptance, and delivery.

DO'NATISTS, a sect of Christians in Africa, who took the name from their founder Donatus. They held that theirs was the only pure church, and that baptism and ordination, unless by their church, were invalid. The Donatists made themselves formidable, when swarms of fanatical peasants, inflamed by their doctrines, in 348, under the name of *Circumcelliones*, attacked the imperial army, and for thirteen years after desolated Mauritania with pillage and murder. Martyrdom was eagerly sought by them, and they voluntarily gave themselves up to the catholics, to be executed. This sect was finally extinguished when the country was conquered by the Saracens.

DO'NATIVE, in the canon law, a benefice given by the patron to a priest, without presentation to the ordinary, and without institution or induction.——*Donative*, among the Romans, was properly a gift made to the soldiers, as *congiarium* was that made to the people.

DON'JON, in fortification, signifies a strong tower, or redoubt, into which the garrison of an ancient fortress might retreat, in case of necessity, and capitulate with greater advantage.

DOR'IC, an epithet for any thing belonging to the Dorians, an ancient people of Greece. The *Doric dialect* was broad

THERE HAVE BEEN THREE POPES OF THE DOMINICAN ORDER, 60 CARDINALS, 150 ARCHBISHOPS, AND 800 BISHOPS, BESIDES OTHER DIGNITARIES.

and rough, yet there was something venerable and dignified in its antique style; for which reason it was often made use of in solemn odes, &c.——The *Doric order* of architecture is the second of the five orders, being that between the Tuscan and Ionic. It is distinguished for simplicity and strength: and is used in the gates of cities and citadels, on the outside of churches, and other situations where embellishment is unnecessary or inappropriate.——The *Doric* mode, in music, was the first of the authentic modes of the ancients; and grave rather than gay.

DOR'MER, or DOR'MENT, in architecture, a window made in the roof of a building,

DOR'MANT, an epithet expressive of a state of inaction or sleep. Hence we speak of *dormant* animals, or such as remain several months in the year apparently lifeless, or, at least, in utter inactivity. The period of long sleep generally begins when the food of the animal grows scarce, and inactivity spreads over the vegetable kingdom. Instinct at this time impels the animals to seek a safe place for their period of rest. The bat hides itself in dark caves, or in walls of decayed buildings; the hedgehog envelopes himself in leaves, and generally conceals himself in fern brakes; and the marmot buries himself in the ground. In this period we observe in the animals, first a decrease of animal heat; and secondly, that they breathe much slower and more uninterruptedly than at other times. The digestion is also much diminished; the stomach and intestines are usually empty; and even if the animals are awakened, they do not manifest symptoms of appetite, except in heated rooms. The causes of the dormant state of animals have generally been sought in a peculiar construction of the organs; but the immediate cause producing this torpidity, is mostly, if not entirely, the cold. Frogs, serpents, and lizards, kept in artificial cold, may remain for years in this state; hence they have been sometimes found enclosed in stones, in which they have been perhaps for centuries. The other lower animals, as snails insects, &c., are also subject to a similar torpidity. A state of partial torpor takes place in the case of the common bear, the badger, and the racoon. The bear begins to be drowsy in November, when he is particularly fat, and retires into his den, which he has lined with moss, and where he but rarely awakes in winter.——*Dormant*, in heraldry, is used for the posture of a lion, or any other beast lying along in a sleeping attitude, with the head on the fore paws, by which it is distinguished from the *couchant*, where, though the beast be lying, yet he holds up his head.——*Dormant* (or *sleeping) partner*, one who takes no share in the active business of a partnership, but is entitled to a share of the profits, and subject to a share of the losses. To be of any use such a partner ought to have sufficient capital to assist the concern in an emergency, or when circumstances seem to warrant it.

DOR'MOUSE, in zoology, a genus of mammiferous quadrupeds, of the order *Glires*. During the rigour of winter they retire to their bed of moss or dry leaves, made in a hollow tree or under shrubs, and rolling themselves up, fall into a torpid or lethargic state; which lasts, with little interruption, throughout that cheerless season. Sometimes they experience a short revival, in a warm, sunny day, when they take a little food, and then relapse into their former condition.

DOR'NOCK, a kind of figured linen, of stout fabric, manufactured for coarse table cloths. It derives its name from a town in Scotland, where it was first made.

DOR'SAL, an epithet for what belongs or relates to the back, as the dorsal fins of fishes.

DORSIF'EROUS, in botany, a term for plants of the capillary kind, without stalks, and which bear their seeds on the back of their leaves.

DORYPH'ORI, in antiquity, an appellation given to the life-guard men of the Roman emperors.

DOSE, the quantity of any medicine prescribed by the physician to be taken by the patient at one time.——*Dose*, in chemistry, the quantity of any substance which is added to any solution, in order to produce any chemical effect.

DOS'SIL, in surgery, a pledget or piece of lint made into a cylindrical form.

DO'TAGE, the childishness and imbecility of old age.

DOT'TEREL, the name of different species of fowls, of the genus *Charadrius*, and the grallic order: as the Alexandrine dotterel, the ringed dotterel, &c.

DOUBLE ENTENTE (*French*), a term applied to a word of two different meanings.——*Double-entendre*, any phrase which has a covert as well as an obvious meaning.

DOUB'LET, among lapidaries, a counterfeit stone composed of two pieces of crystal, with a colour between them, so that they have the same appearance as if the whole substance were coloured.

DOUB'LING *a cape*, is to sail round or pass beyond it, so that the point of land shall separate the ship from her former situation, or lie between her and any distant observer.

DOUBLOON', a Spanish coin of the value of two pistoles, or 3*l.* 6*s.* sterling.

DOUBT', uncertainty of mind; or the act of withholding our assent from any proposition, on suspicion that we are not thoroughly apprised of the merits or from not being able peremptorily to decide between the reasons for and against it.

DOUCEUR', a present or bribe for the acquirement of any desired object.

DOUCINE, (*French*), in architecture, a moulding concave above and convex below, serving as a cymatium to a delicate cornice.

DOVE, in ornithology (a wild pigeon, a species of *Columba*), of which there are three sorts, namely the *ring-dove*, the largest of the pigeon tribe, so wild that it cannot be domesticated; the *stock-dove*, that is mi-

gratory: and the *turtle-dove*, a shy and retired bird living in the woods.

DOVE-TAIL, in carpentry, the manner of fastening boards together by letting one piece into another, in the form of a dove's tail spread, or wedge reversed; which is the strongest of all jointings.

DOW'AGER, in law, properly a widow who enjoys a dower; particularly applied as a title to the widows of princes and nobility. The widow of a king is a *queen-dowager*.

DOW'ER, in law, the portion which a widow has of her husband's lands, to enjoy during her life.

DOWN, the softest and most delicate feathers of birds, particularly of geese, ducks, and swans, growing on the neck and part of the breast. The eider duck yields the best kind.——Also the fine feathery substance by which seeds are conveyed to a distance by the wind; as in the dandelion and thistle.

DOWNS, banks or elevations of sand, which the sea gathers and forms along its shore, and which serve it as a barrier. The term is also applied to tracts of naked land on which sheep usually graze.——*The Downs* is a famous roadstead on the coast of Kent, between the North and South Foreland, where both the outward and homeward bound ships frequently make some stay, and squadrons of men of war rendezvous in time of war. It affords excellent anchorage, and is defended by the castles of Deal, Dover, and Sandwich, as well as by the Goodwin Sands.

DOW'RY, the money or fortune which the wife brings her husband in marriage: it is otherwise called *maritagium*, marriage-goods, and differs from dower.——*Dowry* is also used, in a monastic sense, for a sum of money given with a female upon entering her in some religious order.

DOXOL'OGY, in Christian worship, a hymn in praise of the Almighty. There is the greater and lesser doxology; the angelic hymn, "Glory be to God on high," &c. is the *greater* doxology; the *lesser*, "Glory be to the Father, and to the Son," &c.

DRACHM, a Grecian coin of the value of seven pence three farthings.——*Drachm* is also a weight, containing sixty grains, or the eighth part of an ounce. It is often written *dram*.

DRA'CO, in astronomy, a constellation in the northern hemisphere.

DRA'CO VO'LANS, a meteor in cold marshy countries, consisting of phosphuretted or carburetted hydrogen, which, in certain excitements and combinations, becomes luminous.——There is, likewise, a "draco volans," an insect, found in Africa and India, and distinguished from the lizard tribe, merely by having a broad, lateral membrane, strengthened by radii or bony processes: it wanders about trees, and is able, by means of the membrane, to spring from bough to bough, and support itself for a few moments in the air; it feeds on insects. It is a harmless and inoffensive animal, and in its very limited power of flying resembles the flying squirrel or the bat.

DRACUN'CULUS, in botany, a species of *Arum*, a plant with a long stalk, spotted like the belly of a serpent.——In medicine, *Dracunculi* are small long worms, which breed in the muscular parts of the arms and legs, and are called *Guinea worms*, being common among the natives of Guinea.

DRAFT, in commerce, a bill drawn by one person upon another for a sum of money.——In military affairs, the selecting or detaching of soldiers from an army, or from a military post. Also, the act of *drawing* men to serve in the militia.

DRAG, a machine consisting of a sharp square frame of iron, encircled with a net, and commonly used to rake the mud off from the platform or bottom of the docks, or to clean rivers.

DRAG'-NET, a net to be drawn on the bottom of a pond or river for taking fish.

DRAG'OMAN, an interpreter in the East, whose office it is to interpret for the European ambassadors at the Ottoman court.

DRAG'ON, a kind of winged serpent, much celebrated in the romances of the middle ages.——In Scripture, *dragon* seems sometimes to signify a large marine fish or serpent, and sometimes a venomous land serpent.

DRAG'ONET, a fish with a slender round body, coloured with yellow, blue, and white. It breathes and ejects water through two orifices at the top of the head, like the cetaceous tribe.

DRAG'ON-FLY, the *Libella*, a particularly ravenous insect, with four extended wings. There are many species, with a great variety of colours; and they hover over stagnant waters.

DRAGONNE'E, in heraldry, the term for a lion or other beast, where the upper half resembles a lion, &c., but the other half goes off like the hinder part of a dragon.

DRAGON'S-BLOOD, a resinous juice obtained by incision from several plants, found between the tropics. It comes from the East Indies, in small flat cakes or round balls, or in oval drops wrapped in leaves, and knotted like a chaplet. It is opaque, of a deep reddish brown, brittle, and has a smooth and shining conchoidal fracture. Its taste is slightly astringent; and when burnt, it emits an odour somewhat like benzoin. It is used chiefly for tingeing spirit and turpentine varnishes, for preparing gold lacquer, and for staining marble, to which it gives a red tinge. It was formerly in high repute as a medicine, but at present is very little used.

DRAGON'S HEAD, in botany, the *Dracocephalum*, a genus of plants, of many species, most of them herbaceous.——*Dragon's Head and Tail*, the name given by astrologers to the points of the ecliptic plane crossed by the moon in its orbits; to the former of which they ascribe good fortune, and to the latter, bad.

DRAGOON', a kind of light horseman, of French origin, trained to fight either in or out of the line, in a body or singly, chiefly on horseback, but, if necessary, on foot also. Experience proving that they did not

THE ANIMAL WHICH GAVE RISE TO MANY OF THE FABLES RESPECTING DRAGONS, IS PROBABLY NO OTHER THAN THE GREAT BOA CONSTRICTOR.

THE FIRST PATENT FOR A THEATRE WAS GRANTED TO KILLEGREW FOR DRURY-LANE, THE NEXT TO DAVENANT FOR LINCOLN'S INN FIELDS.

THE GREATEST STAIN ON OUR DRAMA IS THE PRACTICE OF ADMITTING WOMEN OF LOOSE CHARACTER—AS DISGUSTING AS IT IS IMMORAL.

answer the end designed, they were hardly ever used in infantry service, and now form a useful kind of cavalry, mounted on horses too heavy for the hussars, and too light for the cuirassiers.

DRAINING, in agriculture, a method of improving the soil by withdrawing the water from it. Where the land is composed of such soils as are liable to admit and retain the excesses of moisture, they are exposed to much injury and inconvenience from the retention and stagnation of water: they consequently require artificial means to drain and render them capable of affording good crops. To effect this there are various modes, adapted to the peculiar nature of the land, its situation, &c., the true knowledge of which forms an important feature in the business of a practical agriculturist, and will well repay his care. By a judicious system of *under-draining*, large tracts of land, apparently worthless, have been brought into a state of high cultivation; nay, we have ourselves been informed, by a large landed proprietor, whose estates are situated on the northern borders of Gloucestershire, and who has paid the most sedulous attention to this practice, that the time is not very remote when some of his own land, now worth forty shillings per acre, was let for five!

DRAM'A, the name of all compositions adapted to recitation and action on the stage, whether tragedy, comedy, opera, or farce; in which are displayed, for instruction and amusement, all the passions, feelings, errors, and virtues, of the human race in real life. The elements of the dramatic art are found among all nations; and every people which has made progress in civilization, has, at the same time, shewn some taste for it. The drama, says Vossius, owes its rise to the days of festivity; for in ancient times, it was usual for men, when they gathered in the fruits of the earth, to meet together that they might sacrifice to the deity, and unbend their minds from the fatigues of the harvest. Hence arose two sorts of poetry, the one grave, in praise of the gods, the other jocose and full of lampoons directed against each other. From the former arose tragedy; from the latter, satire, comedy, and buffoonery. The Europeans are indebted for the drama, as for so many other productions of civilization, to the Greeks. From them it passed to the Romans, whose acquisitions in civilization were in part preserved, and in part revived by the Italians; but the dramatic genius who has surpassed all ancient and modern writers, in universality of conception and knowledge of human nature, appeared in the person of our own unrivalled Shakspeare. In the beginning of the middle ages, when everything noble was buried under the deluge of barbarism, the dramatic art was lost, or existed only among the lower classes of the people, in plays improvisated at certain festivals; for instance, at the carnival. These were attacked as heathenish, immoral, and indecent exhibitions; but the favour which they enjoyed among the people, and the spirit of the times, induced the clergy to encourage theatrical exhibitions of subjects from sacred history. It is impossible to ascertain the exact period when theatrical amusements were first introduced into England; but they are mentioned as having existed very early by William Fitz-Stephen, a monk of Canterbury, in his *Descriptio nobilissimæ civitatis Lundonæ*, written soon after the year 1170. "London, instead of common interludes belonging to the theatre, has plays of a more holy subject; representations of those miracles which the holy confessors wrought, or of the sufferings wherein the glorious constancy of the martyrs did appear." These representations being mentioned as neither new nor uncommon, we may reasonably conclude them to be of a date still more ancient; and they continued a long time after to be the only subjects for the drama. These *Mysteries*, as they were at that time denominated, were followed by a species of the drama, styled *Moralities*, in which the senses, passions, affections, virtues, and vices, were personified, and constituted the characters: these being of a moral turn, and contrived to entertain as well as instruct, soon exhibited some dawnings of poetry, with occasional attempts at wit and humour, which naturally introduced *comedy*: the earliest English piece, meriting that title, is *Gammer Gurton's Needle*, written by Dr. Still; performed at Christ's college, Cambridge, and printed in 1551.——The moral influence of dramatic representations on the manners of a people is far greater than may generally be supposed; and in our opinion there is no class of persons more deserving of public esteem than those censors of histrionic performances, who sit in judgment on them, and conscientiously award their praise or censure. Both dramatists and managers who endeavour to exalt the character of the stage, cannot be too highly commended or rewarded; while such as ignobly study to gratify a depraved taste, are fit objects for the severest reprehension.

DRAMATIS PERSONÆ, the characters represented in a drama.

DRASTICS, medicines which operate speedily and effectually.

DRA'PERY, in sculpture and painting, the representation of the clothing of human figures; also hangings, tapestry, curtains, and most other things that are not flesh or landscape.

DRAUGHT, in architecture, the delineation of any intended building, &c.—— In navigation, the depth of water necessary to float a vessel; or the depth to which a ship sinks when laden; as, a ship of ten feet draught.——*Draughts*, an amusing game played on a chequered board, like the chess-board.——*Draught-hooks*, the iron hooks fixed on the cheeks of a cannon-carriage, used in drawing the gun backwards and forwards.——*Draught-horse*, a horse used in drawing carts, &c., as distinguished from a saddle-horse.

DRAW'BACK, in commerce, a term used to signify the remitting or paying back of the duties previously paid on a commodity, on its being exported; so that it may be sold in a foreign market on the same terms as if it had not been taxed at all. By this device, therefore, merchants are enabled to export commodities loaded at home with heavy duties, and to sell them abroad on the same terms as those fetched from countries where they are not taxed.——In a popular sense, *drawback* signifies any loss of advantage, or deduction from profit.

DRAW, a word used in a variety of situations, and in some of very opposite meanings, but in most of its uses it retains some shade of its original sense—to pull, to move forward by the application of force, or to extend in length. It expresses an action gradual or continuous, and leisurely, yet not requiring the toil and difficulty which its kindred word *drag* implies.

DRAW'ER and DRAW'EE, in commerce, the drawer is he who draws a bill of exchange or an order for the payment of money; and the *drawee*, the person on whom it is drawn.

DRAW'ING, the art of representing the appearances of objects upon a flat surface, by means of an outline which describes their form and shadow, situation, distance, &c. [See Painting, Perspective, &c.]

DRAW'ING-ROOM, a room appropriated for the reception of company at court; or to which, in common cases, parties withdraw after dinner. Also, the company assembled at court to pay their respects to the sovereign.

DREAM, a series of thoughts which occupy the mind of a sleeping person, and which therefore are not under the command of reason. According to Wolfius, every dream takes its rise from some sensation, and is continued by the succession of phantasms in the mind. He observes, that though it be certain, *a priori*, from the nature of the imagination, that dreams must begin by some sensation, yet that it is not easy to confirm this by experience; it being often difficult to distinguish those slight sensations, which give rise to dreams, from phantasms or objects of imagination. It has often been argued, that the state of the soul in sleep is one of the most powerful proofs of her immortality and excellence. Sleep is justly observed to be the image of death, and this temporary death, we see, does not destroy the power of thinking: the soul, indeed, seems to be deprived of the nobler faculties, but that is only caused by the still subsisting union between her and the sleeping body, which clogs and renders her less active and powerful. Her higher faculties are impeded by the indisposition of the bodily organs, and suspended by her union with them whilst they are in a dead and torpid state, and rise in perfection and vigour according as her material fetters less encumber her. Be the cause of dreams whatever it may, or the impressions which they leave on the mind ever so powerful, they never ought to create superstitious anxiety and solicitude, nor be converted into presages and predictions at variance with the dictates of cool reason and sober judgment.

DREDG'ING, the process of catching oysters, by the removing or dragging mud with dredges, &c.——*Dredging-machine*, an engine used to take up mud or gravel from the bottom of rivers, docks, &c.

DREGS, the feculent sediment of liquors. Also waste or worthless matter: hence, figuratively, the most vile and despicable characters; as, the *dregs* of society.

DRESS, clothes worn as the covering or ornament of the body; and generally, though not always, applied to elegant attire.——*To dress*, is a military term for arranging the men in line.

DRIFT, a heap of any matter driven together; as, a drift of snow or sand.——*Drift*, in mining, a passage cut out under the earth, betwixt shaft and shaft, or turn and turn.——*Drift*, in navigation, the angle which the line of a ship's motion makes with the nearest meridian, when she drives with her side to the waves, and is not governed by the helm.——*Drift-sail*, a sail used under water, veered out right a-head by sheets, as other sails are. It serves to keep the ship's head right upon the sea in a storm, and to hinder her driving too fast in a current.——A boat is also said to *drift*, or go *a drift*, when it floats on the water without any one to row or steer it.

DRILL, in mechanics, a small instrument for making such holes as punches will not conveniently serve for. Drills are of various sizes, and are chiefly used by smiths and turners.——*To drill*, in a military sense, to teach and train raw soldiers to their duty, by frequent exercise.——*Drilling*, in husbandry, a mode of putting seed into the ground by a machine called a *drill plough*, which makes channels in the ground and lets the seed into them, so that it comes up in rows at regular distances from each other.

DROM'EDARY. [See Camel.]

DRONE, the male of the honey bee. It is larger than the working bee, but less than the queen bee. The drone makes no honey; and after living a few weeks, they are killed or driven from the hive.

DROP, a small portion of any fluid in a spherical form; as, a *drop* of water, a drop of laudanum, &c.——The part of a gallows which sustains a criminal before he is executed, and which suddenly *drops* after the fatal cord is attached to him——To *drop astern*, in seaman's language, is to slacken the velocity of a vessel to let another pass her.

DROP'SY, in medicine, an unnatural collection of watery humour, either throughout the whole body, or in some part of it, as the cavity of the abdomen. It occurs most frequently in persons who are debilitated by disease. The dropsy takes different names according to the part affected; as *ascites*, or dropsy of the abdomen, *hydrocephalus*, or water in the head, &c.

DROS'ERA, in botany, a genus of plants,

THE CRUDE IDEAS WHICH DISTURB US IN OUR SLEEP, AND WHICH WE CALL DREAMS, GIVE RISE TO MUCH SUPERSTITIOUS FOLLY.

A NEW AND REALLY CURIOUS ART, CALLED "PHOTOGENIC DRAWING," OR "DAGUERROTYPING," CAME INTO NOTICE DURING THE YEAR 1839.

class 5 *Pentandria*, order 5 *Pentagynia*, they are herbaceous and of small size, and very singular in their structure. The leaves are furnished with glandulous hairs on the upper surface, and fringed round the edge: these hairs have each a small globule of pellucid liquor like dew, continuing even in the hottest part of the day, and in the fullest exposure to the sun. Hence the English name "the sun-dew." The *Drosera acaulis* has a sessile flower in the bosom of the root leaves. These plants have the property of entrapping small insects within their folded leaves.

DROSOM'ETER, an instrument for ascertaining the quantity of dew which falls. It consists of a balance, one end of which is furnished with a plate to receive the dew, the other containing a weight protected from it.

DROVE, a number of animals collected together, and driven in one body. When merely collected, we say a herd of cattle, or a flock of sheep; but a *drove* is a herd or flock *driven*. He who drives them is called a *drover*.

DROWN'ING, the extinction of the vital powers, caused by immersion in a liquid. If a man, unable to swim, falls into the water, he instinctively makes every exertion to escape from it; for a time he struggles, but at last becomes exhausted, and sinks. The methods of treatment recommended by the London Humane Society for the recovery of persons in a state of suspended animation ought to be kept in every house, and known to every individual; and in all cases, medical assistance should be immediately sent for. In the mean time, avoid all rough usage, and attend to the following *cautions:* never hold the body up by the feet; nor roll the body on casks; nor rub the body with salts or spirits; nor inject tobacco-smoke or infusion of tobacco; but convey the body carefully, with the head and shoulders supported in a raised position, to the nearest house: strip the body, and rub it dry; then wrap it in hot blankets, and place it in a warm bed, in a warm chamber; put bladders or bottles of hot water, or heated bricks, to the pit of the stomach and the soles of the feet, and foment the body with hot flannels; but, if possible, immerse the body in a warm bath, as hot as the hand can bear without pain, as this is preferable to the other means of restoring warmth. Do not, however, suspend the use of the other means at the same time. These observations are recommended in the absence of a medical practitioner. He, perhaps, will see it necessary to employ electricity, injections, &c. The treatment recommended by the society is to be *persevered* in three or four hours; for it is a very erroneous opinion, that persons are irrecoverable because life does not soon make its appearance.

DRUG, a general name for substances used in medicine, sold by the druggist, and compounded by apothecaries, &c. It is also applied to dyeing materials.——In commerce, any article lying on hand, or become unsaleable, is called a *drug*.——A *mortal* or *deadly drug*, is poison.

DRUG'GET, a coarse woollen fabric, used for covering carpets, and sometimes as an article of clothing by females of the poorer classes.

DRU'IDS, the priests or ministers of the ancient Britons and Gauls, resembling, in many respects, the bramins of India. The Druids were chosen out of the best families; and were held, both by the honours of their birth and their office, in the greatest veneration. They are said to have understood astrology, geometry, natural history, politics, and geography; they had the administration of all sacred things; were the interpreters of religion, and the judges of all affairs; and, according to Cæsar, they believed in the immortality of the soul, and its transmigration through different bodies.

DRUM, a military musical instrument in form of a cylinder, hollow within, and covered at the ends with vellum, which is stretched or slackened at pleasure by the means of small cords and sliding knots. It is beat upon with sticks. Some drums are made of brass, but they are commonly of wood. There are several beats of the drum, as the *chamade, reveille, retreat*, &c.—— *Drum of the ear*, the hollow part of the ear, behind the membrane of the *tympanum;* which latter is a tense membrane, closing the external passage of the ear, and receiving the vibrations of the air.

DRUN'KENNESS, intoxication. Physically considered, it consists of a preternatural compression of the brain, and a discomposure of its fibres, occasioned by the fumes or spirituous parts of liquors; so that the drunkard's reason is disordered, and he reels or staggers in walking. Drunkenness appears in different shapes, in different constitutions: some it makes gay, some sullen, and some furious. Hobbes makes voluntary drunkenness a breach of the law of nature, which directs us to preserve the use of our reason. Paley calls it "a social festive vice;" and says, "the drinker collects his circle; the circle naturally spreads; of those who are drawn within it, many become the corrupters and centres of sets and circles of their own; every one countenancing, and perhaps emulating the rest, till a whole neighbourhood be infected from the contagion of a single example." Drunkenness is punishable by fine and imprisonment, and in law is no excuse for any crime committed during the paroxysm.

DRUPE, in botany, a pulpy fruit, containing a nut or stone, with a kernel like the plum, cherry, apricot, &c. Hence the epithet *drupaceous*, for fruit consisting of drupes.

DRUSE, in mining, a cavity in a rock, having its interior surface studded with crystals, or filled with water.

DRY'ADS, in the heathen theology, a sort of deities or nymphs, which the ancients thought inhabited groves and woods. They differed from the *Hamadryads*, these latter being attached to some particular tree with

which they were born, and with which they died; whereas the *Dryads* were goddesses of trees and woods in general.

DRY'ITE, in geology, fragments of petrified or fossil wood in which the structure of the wood is recognized.

DRY-ROT, a fungus which grows in timber, decomposes its fibres, and produces rapid decay. *Dry-rot* is so called by architects in contradistinction only to the more usual circumstances of decay to which wood is liable: such a designation however does not appear the most eligible, as it is now sufficiently ascertained to arise only from moisture. The dry rot, then, consists in a more or less rapid decomposition of the substance of the wood from moisture deposited on it by condensation: to the action of which it is more disposed in certain situations than in others; and this moisture operates more quickly on wood which most abounds with the saccharine, or fermentable principle of the sap. There are a great number of causes for this species of decay: some buildings have it from the locality of their situations, others from the nature of the material employed, and some from a too rapid finishing. When it takes place from situation, viz. damp walls near the earth's surface, it is generally, if not universally, occasioned by the percolation of water from the higher adjoining grounds, which thus intercepted in its current attempts to follow the general hydrostatic law of elevating itself by the syphon line, to a height equal to that from whence it had its origin. When the cause arises from the state of the material, or from the too rapid finishing, or indeed any other stimulus, the effectual remedy is to char, or carbonize the surface of the wood. Many persons have written on this subject, and the nostrums proposed are as numerous as their authors: but no means of checking the evil can be depended upon, except that of removing the corrupted and contagious matter, and admitting a free circulation of air.

DUALIS'TIC, an epithet derived from the *dual* number in Greek. The *dualistic* system of Anaxagoras and Plato taught that there are two principles in nature, one active, the other passive.

DU'AL, in grammar, that number which is used, in some languages, to designate two things, whilst the plural exists to express many.

DU'ALISM, the philosophical exposition of the nature of things by the adoption of two dissimilar primitive principles, not derived from each other.——In theology, *dualism* is the doctrine of those who maintain that only certain elected persons are capable of admission to eternal happiness, and that all the rest will be subject to eternal condemnation.

DUC'AT, a foreign coin of different values, and which are either of silver or gold. The silver ducat is generally of the value of 4*s.* 6*d.* sterling, and the gold ducat of twice that value.

DUCATOON', a silver coin, struck chiefly in Italy, value about 4*s.* 8*d.* sterling; but the gold ducatoon of Holland is worth twenty florins.

DU'CES TE'CUM, (*bring with thee*), in law, a writ commanding a person to appear on a certain day in the court of Chancery, and to bring with him some writings, evidences, or other things, which the court would view.

DUCTIL'ITY, the property of some metals, as gold, silver, copper, &c. which renders them capable of being extended by hammering or drawing, without breaking. Thus a single grain of gold may be beat into an extent of several square feet, and yet the leaf remain so compact, as not to transmit the rays of light; and Dr. Halley found that a small cube of gold, whose side is the 1-100th part of an inch only, contains 2,433,000 visible parts. M. Reaumur shews that in the common way of drawing gold-wire, a cylinder of silver 22 inches long and one and a half inch in diameter is stretched to 1,163,520 feet, or is 634,692 times longer than before, which amounts to about 97 leagues. To wind this thread on silk, for use, it is first flattened, in doing which it stretches at least one-seventh further, so that the 22 inches are now 111 leagues; but in the flattening, instead of one-seventh, it could be stretched one-fourth, which would bring it to 120 leagues!

DUCT, in medicine, any vessel or tube in the animal body, by which the blood, chyle, lymph, &c. are carried from one part to another. Also, the vessels of plants in which the sap is conveyed.

DUCH'Y, the territory or dominions of a duke.

DUCK'WEED, or DUCK'S-MEAT, a plant growing in ditches and stagnant waters, and serving as food for ducks and geese.

DUE, that which one contracts to pay or perform to another; that which law or justice requires to be paid or done. Also, that which office, rank, station, or established rules of right or decorum, require to be given or performed.

DU'EL, in law, was originally a combat between two persons for the trial of the truth; but is now a premeditated battle between two persons on some private quarrel, in which, if death ensue, both the principal and the seconds are guilty of murder. ——An unpremeditated sudden fight is a *rencontre*.

DUEN'NA, an old woman who is kept to guard a younger.

DUET', or DUET'TO, in music, a song or air in two parts.

DUKE, a sovereign prince in Germany, and the highest title of honour in England next to the Prince of Wales. His consort is called a *duchess*.——In England, among the Saxons, the commanders of armies, &c. were called dukes, *duces*, without any addition, till Edward III. made his son, the Black Prince, duke of Cornwall; after whom there were more made in the same manner, the title descending to their posterity. Duke, at present, is a mere title of dignity, without giving any domain, terri-

THE PARASITICAL VEGETABLE WHICH OCCASIONS THE DRY-ROT IN SHIPS IS A LEATHER-LIKE FUNGUS, CALLED XYLOSTROMA GIGANTEUM.

SUCH IS THE DUCTILITY OF GOLD, THAT ONE OUNCE WILL GILD A SILVER WIRE MORE THAN THIRTEEN HUNDRED MILES LONG.

THE FIRST WORK EVER PRINTED FOR THE INSTRUCTION OF THE DEAF AND DUMB WAS WRITTEN BY JOHN BONET, A SPANIARD, IN 1620.

THE CELEBRATED DWARF, JEFFRY HUDSON, WAS 3 FEET 9 INCHES IN HEIGHT, BUT THE POLISH COUNT BOROWLASKI WAS ONLY 2 FEET 4 INCHES.

tory, or jurisdiction over the place from whence the title is taken.

DULOC'RACY, a government in which slaves and the lowest order of the people have the power.

DUMO'SÆ, the 43d Linnæan natural order of plants, containing shrubs and bushes, as the elder, &c.

DUL'CIFIED SPIRITS, a term formerly applied to the different ethers; as, the *dulcified spirits* of nitre and vitriol.

DUL'CIMER, a musical instrument played by striking brass wires with little sticks.

DUMB. The most general, if not the sole cause of dumbness, is the want of the sense of hearing; and nothing is more fallacious than the idea, that the want of speech is owing to the want of mental capacity. The necessity of communication, and the want of words, oblige him who is dumb to observe and imitate the actions and expressions which accompany various states of mind and of feeling, to indicate objects by their appearance and use, and to describe the actions of persons by direct imitation, or pantomimic expression. Hence what has been called the natural sign language has been adopted by instructors of the deaf and dumb, in order to express all the ideas we convey by articulate sounds. This language, in its elements, is to be found among all nations, and has ever been the medium of communication between voyagers and the natives of newly discovered countries. The more lively nations of Europe, belonging to the Celtic race, the French, Italians, &c. make great use of it, in connexion with words, and sometimes even without them. The more phlegmatic people of the Teutonic race, in England and Germany, are so little disposed to it, that they regard it as a species of affectation or buffoonery in their southern neighbours. The method of instructing the deaf and dumb, which has been most successfully employed in this country, consists in teaching the pupil the relation between the names of objects and the objects themselves, the analysis of words into letters of the alphabet, and the particular gesture which he is to attach to each word as its distinctive sign—showing to him also the meaning of collective words, as distinguished from those denoting individual objects, or parts of objects. It is out of our power to enter into details in this place; but those readers who seek further information will find it in a book published in 1809, on the Instruction of the Deaf and Dumb, by Dr. Watson, who had the management of the asylum for this purpose, which was established in London, in 1792. [See also the article DEAFNESS.]

DUN, of a colour partaking of a dull brown and black.——*To dun*, to press for the payment of money by repeatedly calling for it. Hence an importunate creditor is called a *dun*.

DUN'NAGE, in commercial navigation, loose wood laid in the bottom and against the sides of the ship's hold, in order to prevent the cargo from being injured in the event of her becoming leaky.

DUN'NING, a particular method of curing cod-fish, practised off the coast of New Hampshire, in North America. It is thus described:—"the cod are taken in deep water, split, and stack-salted; then laid in a pile for two or three months, in a dark store, covered for the greatest part of the time with salt hay or eel-grass, and pressed with some weight. In April or May, they are opened and piled again as close as possible in the same dark store, till July or August, when they are fit for use."

DUODE"CIMALS, in arithmetic, are numbers proceeding in a proportion of twelves; in the same way as decimals proceed in a proportion of tens. This rule is used by workmen and artificers in computing the contents of their work. Dimensions are usually taken in feet, inches, and parts. —— *Duoden'ary Arithmetic*, is that in which the local value of the figures increases in a twelvefold proportion.

DUODE"CIMO, having or consisting of twelve leaves to a sheet; or a book in which a sheet is folded into twelve leaves.

DUODE'NUM, in anatomy, the first of the small intestines.

DU'PION, a double cocoon, formed by two or more silk-worms.

DU'PLE, among mathematicians, an epithet applied to a ratio, where the antecedent term is double the consequent, or where the exponent of the ratio is 2: thus the ratio of 8 to 4 is a duple ratio.——*Subduple ratio* is just the reverse of the former, or as 1 to 2. Such is 4 to 8, or 6 to 12.

DU'PLICATE, a copy or transcript.——*Duplicate proportion* or *ratio*, is the proportion of the square of one number to the square of another.

DU'PLICATURE, in anatomy, the fold of a membrane or vessel.

DUPLI"CITY, the act of dissembling one's real opinions for the purpose of concealing them and misleading persons in the conversation and intercourse of life.

DU'RA MA'TER, in anatomy, the membrane which lies between the bones of the skull and the parts of the brain, and also dividing it into two parts.

DURESS', in law, is restraint or compulsion; as, where a person is wrongfully imprisoned, or restrained of his liberty, contrary to law; or is threatened to be killed, wounded, or beaten, till he executes a bond, or other writing. Any bond, deed, or other obligation, obtained by duress, will be void in law; and in an action brought on the execution of any such deed, the party may plead that it was brought by duress.

DURANTE, in law, During; as, *durante bene placito*, during pleasure; *durante minore ætate*, during minority; *durante vitâ*, during life.

DUR'RA, a sort of millet cultivated in North Africa.

DUSK, a middle degree between light and darkness; as twilight, or the *dusk* of the evening. Hence the words *dusky*, *duskiness*, &c.

DU'TY, in commerce, any tax or excise; a sum of money required by government to be paid on the importation, exportation, or consumption of goods.——In a military sense, the business of a soldier or marine on guard.——In its universal application, *duty* includes any natural, moral, or legal obligation; as, it is the *duty* of every citizen of a state to pay obedience to its laws; obedience, respect, and kindness are the *duties* which children owe their parents.

DUUM'VIRI, in Roman antiquity, a general appellation given to magistrates, commissioners, and officers, where two were joined together in the same function. The office, dignity, or government of two men thus associated, was called a *duumvirate*. ——*Duumviri capitales*, were the judges in criminal causes: from their sentence it was lawful to appeal to the people, who only had the power of condemning a citizen to death.——*Duumviri municipales*, were two magistrates in some cities of the empire, answering to what the consuls were at Rome; they were chosen out of the body of the *decuriones*; their office usually lasted five years, upon which account they were frequently termed *quinquinales magistratus*. ——*Duumviri navales*, were the commissaries of the fleet. The duty of their office consisted in giving orders for the fitting of ships, and giving their commissions to the marine officers, &c.——*Duumviri sacrorum*, were magistrates created by Tarquinius Superbus, for the performance of the sacrifice, and keeping of the Sibyl's books. They were chosen from among the patricians, and held their office for life: they were exempted from serving in the wars, and from the offices imposed on the other citizens, and without them the oracles of the Sibyls could not be consulted.

DWARF, in general, an appellation given to things greatly inferior in size to that which is usual in their several kinds: thus there are dwarfs of the human species, dwarf-trees, &c. The Romans were so passionately fond of dwarfs, that they often used artificial methods to prevent the growth of boys designed for dwarfs, by inclosing them in boxes, or by the use of tight bandages.

DY'EING, the art of impregnating and giving a lasting colour to silks, cloths, and other substances, whereby their beauty is much improved, and their value enhanced. Dyeing, properly so called, is a chemical process; and in order that it may succeed, it is necessary that the colouring matters should be dissolved in some fluid, and that their attraction to that fluid should be less than that to the stuff. The essential circumstances in dyeing are to ascertain the affinities of the colouring substance; first, to the solvents; secondly, to those substances which modify its colour, increase its brilliancy, and strengthen its union with stuff; thirdly, to the different agents which may change the colour, and principally to air and light. In dyeing, the term *mordant* is applied to those substances which serve as intermedia between the colouring particles and the stuff to be dyed, either for the purpose of facilitating, or of modifying their combination, and by their means colours are varied, brightened, made to strike, and rendered more durable. The principal substances employed as mordants are aluminous salts, lime, metallic oxydes, some astringent substances, and animal matters. The three simple colours in dyeing are red, yellow, and blue; all other colours are compounded of these. The ancient Egyptians cultivated the art of dyeing with some degree of scientific precision; but Tyre was the nation of antiquity that made it the staple of its commerce; and there is little doubt that purple, the sacred symbol of royal and sacerdotal dignity, was a colour discovered in that city, and that it contributed to its opulence and grandeur. The moderns have obtained from the new world several dye-drugs unknown to the ancients; such as cochineal, Brazil wood, logwood, annatto, &c.; but the vast superiority of our dyes over those of former times, must be ascribed principally to the employment of pure alum and solution of tin as mordants; substances which give to our common dye-stuffs remarkable depth, durability and lustre.

DYNAM'ETER, an instrument for determining the magnifying power of telescopes.

DYNAMOM'ETER, an instrument for measuring the relative strength of men and other animals.

DYS'CRASY, in medicine, an ill habit or vitiated state of the humours.

DYS'ENTERY, in medicine, a disease in which the excrements consist chiefly of blood, mucus, and other morbid matter, accompanied with griping of the bowels, &c.

DYS'ODILE, a species of coal of a greenish or yellowish gray colour, in masses composed of thin layers. Its odour when burning is very fetid.

DYS'OREXY, in medicine, a bad or depraved appetite.

DYNAM'ICS, the science of moving powers, particularly of the motion of bodies mutually acting on one another, investigates the laws which govern complicated phenomena, as the motions of the heavenly bodies, oscillating bodies, revolving bodies, &c. under all circumstances.

DY'NASTY, a race or series of princes who have reigned successively in any kingdom; as the *dynasties* of Egypt or Persia.

DYTIS'CUS, in entomology, a genus of insects of the coleopterous order.

DYSPEP'SIA, or DYSPEP'SY, in medicine, difficulty of digestion. Hence those who are afflicted with indigestion are termed *dyspeptic* persons. The disorder of the digestive function is the most frequent and prevailing of the ailments that afflict man in the civilized state; all classes and all ages suffer from its attacks. But the increased prevalence of dyspepsia or indigestion, in modern times, arises from the more frequent injury done to the stomach and its functions, directly, by the habits of luxurious

IN DYEING, ALUM IS MUCH USED, BECAUSE IT CLEANSES AND OPENS THE PORES ON THE SURFACE OF THE CLOTH, AND FIXES THE COLOUR.

THE SULPHURETS OF ARSENIC, LEAD, COPPER, ANTIMONY, &c. ARE USED WITH ADVANTAGE IN DYEING VARIOUS KINDS OF STUFFS.

indulgence, which have been exceedingly extended; and indirectly, by the multiplication of intellectual and moral agitations, from the extension of the commercial and financial operations of society, the greater activity and employment of the intellectual faculties, and the augmentation of political, social, and individual reverses.

DYS'PHONY, in medicine, a difficulty of speaking, occasioned by an ill disposition of the organs of speech.

DYSPNŒ'A, in medicine, a difficulty of breathing.

DYS'URY, in medicine, difficulty in discharging the urine, attended with pain and a sensation of heat.

E.

E, the fifth letter in the alphabet, and the second vowel, has different pronunciations in most languages. The French have their *e* open, *e* masculine, and *e* feminine or mute. In English there are three kinds of *e;* open, as in *wear, bear;* long, as in *here, mere, me;* and short, as in *wet, kept, &c.* As a final letter it is generally quiescent: but it serves to lengthen the sound of the preceding vowel, as in *mane, cane, thine,* which without the final *e* would be pronounced *man, can, thin.* In many other words the final *e* is silent, as in *examine, definite,* &c. As a numeral, E stands for 250. In sea-charts, E stands for East: E by N. and E by S. East by North, and East by South.

E'AGLE, a rapacious fowl, of the genus *Falco,* is called, on account of his great strength and the rapidity and elevation of his flight, the king of birds. There are several species; as the sea-eagle, or ossifrage, which feeds on fish; the golden eagle, three feet long, with wings extending above seven feet, which devours fawns, lambs, kids, &c.; the cinereous eagle, common in the mountains of Europe; the crying or plaintive eagle, of Siberia and Asia; and also the bald or white-headed eagle, which preys on flesh and fish. The talons and bills of all the species are strong and terrible; their sight is keen and distant and they live to a great age.——*Eagle,* in heraldry, one of the most noble bearings in armoury, and, according to the learned in that science, ought to be given to none but such as greatly excel in courage and magnanimity——Among the ancients, the eagle was held sacred to Jupiter, and placed on his sceptre, as the carrier of the lightning, and thereby expressive of superior dominion. In this sense he is used as the emblem and symbol of nations, princes, and armies. As the standard of an army, the eagle was first used by the Persians. Among the Romans, it was either of gold or silver, borne singly on the point of a staff, till the time of Constantine, when the empire being divided into the eastern and western, the eagle was afterwards represented with two heads. During the sway of Napoleon, the French took for their standard an eagle with his wings folded; and an eagle standing with outspread wings, is the military emblem of the United States of America.——The eagle is also the badge of several orders, as the black eagle and the red eagle of Prussia, the white eagle of Poland, &c.

E'AGLET, a diminutive of eagle, properly signifying a young eagle.——In heraldry, when there are several eagles on the same escutcheon, they are termed eaglets.

E'AGLE-STONE, in mineralogy, an argillaceous oxyde of iron, varying in size from that of a walnut to a man's head; of a spherical or oval shape; having a rough surface, and being essentially composed of concentric layers. In the centre is generally a kernel or nucleus, sometimes moveable, and always differing from the exterior in colour and density. The ancients gave them the name of eagle-stones, from an idea that the eagle carried them to her nest to facilitate the laying of her eggs.

EAR, the organ of hearing; a cartilaginous substance attached to the head for conveying undulations of air to the nerves and brain. The external cartilage collects the sound into the *concha,* at the bottom of which is the *tympanum,* like the skin of a drum, and beneath the tympanum is a cavity, terminated by a tube called the *Eustachian tube;* and further on are several winding passages filled with a watery fluid, in which the nerves are situated.——*Ear,* in music, denotes that internal sense by which we perceive and judge of harmony, and distinguish musical sounds.——*Ear,* among gardeners, a name given to the leaves that first appear from the seed which differ considerably from other leaves.

EAR'ING, in seamen's language, a small rope employed to fasten the upper corner of a sail to its yard.

EARL, a title of British nobility, between a marquis and a viscount; now the third degree of rank. William the Conqueror first made this title hereditary, giving it in fee to his nobles, and allotting them for the support of their state the third penny out of the sheriff's court, issuing out of all pleas of the shire whence they had their title. At present the title is accompanied by no territory, private or judicial rights, but confers nobility, and an hereditary seat in the House of Lords. In official instruments, they are called by the king, "trusty and well-beloved cousins," an ap-

WHEN EAGLES TAKE FLIGHT, THEY SPRING PERPENDICULARLY UPWARDS, WITH THEIR EYES STEADILY FIXED UPON THE SUN.

THE EAGLE SOARS TO A GREATER HEIGHT THAN ANY OTHER BIRD, FROM WHICH CIRCUMSTANCE THE ANCIENTS CALLED IT THE MESSENGER OF JOVE.

IT IS SUPPOSED THAT IRON IS ONE OF THE CONSTITUENT PARTS OF THE EARTH'S CENTRE, AND TO THIS IT MAY OWE ITS MAGNETIC POLARITY.

pellation as ancient as the reign of Henry IV. For some time after the Norman conquest they were called *counts*, and their wives to the present day are styled *countesses*.——The *Earl's coronet* has no flowers raised above the circle, like that of a duke and a marquis, but only points rising, and a pearl on each of them.

EARL MARSHAL OF ENGLAND, a great officer who had anciently several courts under his jurisdiction, as the court of chivalry, and the court of honour. Under him is also the herald's office, or college of arms. He has some pre-eminence in the Marshalsea court, where he may sit in judgment against those who offend within the verge of the king's court. This office is of great antiquity in England, and has been for several ages hereditary in the family of the Howards.

EARN'EST, in commercial law, money advanced by the buyer of goods, to bind the seller to the performance of a verbal bargain.

EAR'RING, an ornament worn at the ear, by means of a ring passing through the lobe, with a pendant of diamonds or pearls, &c. attached.

EARTH, in astronomy and geography, one of the primary planets, being the terraqueous globe which we inhabit. In remote antiquity, the earth was regarded as a flat, circular body, floating on the water: but the great distances which men were able to travel soon refuted this limited idea as an optical illusion; and the spherical form of the earth was consequently suspected. According to the Ptolemaic system it was supposed to be immovable in the centre of the universe; but according to that of Copernicus it moves from west to east, so as to occasion the succession of day and night, and also annually round the sun, so as to cause the different seasons. By some of the ancients its form was supposed to be like that of an oblong cylinder; by others, of the form of a drum; and by others, a plane surface. Succeeding ages have, however, demonstrated it to be nearly spherical; and among other considerations for this theory, the following are given:—1. All the appearances of the heavens, both at land and at sea, are the same as they would be if the earth were a globe. 2. In eclipses of the moon, which are caused by the shadow of the earth falling upon the moon, this shadow is always circular, and a body can be no other than a globe, which in all situations casts a circular shadow. 3. Several navigators have sailed quite round the globe, steering their course directly south and west till they came to the Magellanic sea, and from thence to the north and west, till they returned to their port from the east; and all the phenomena which should naturally arise from the earth's rotundity, happened to them. How, indeed, could the earth appear, from every possible position, as a surface bounded by the firmament, if it were not a sphere encircled by it? How else could the horizon grow wider and wider, the higher our position? Or how could the fact be explained, that we see the tops of towers and mountains, at a distance, before the bases become visible? It is true, the surface of the earth is not an exact geometrical globe, but then the inequalities are so inconsiderable, that the highest mountain bears no greater proportion to the bulk of the earth, than a grain of dust does to a common globe. The figure of the earth then was reckoned by mathematicians and geographers as perfectly spherical, excepting the small inequalities in its surface, of mountains and valleys, till it engaged the attention of Sir Isaac Newton and Mr. Huygens, who demonstrated from the laws of hydrostatics, and the revolution of the earth about its axis, that its figure was not a true sphere, but an oblate spheroid flattened towards the poles. Various measurements have since put this beyond all doubt. ——*Size of the Earth.* Not only the figure of the earth has been ascertained, but its *magnitude*; and it is found that its diameter is equal to 7,958 miles in length: circumference 25,000: superficies 198,944,206 square miles: solidity 26,393,000,000 cubic miles. It is also imagined that the unexplored portions of the earth and seas contain 160,522,026 square miles, and the inhabited part of the earth is equal to 38,422,180, in the following proportions, viz. in Europe, 4,456,065; in Asia, 10,968,423; in Africa, 9,654,817; America, 14,142,875.——The *exterior surface* of the earth consists of granitic and primary mountains, which slope beneath the general surface; while that surface consists of rocks and strata of later formation, or of mixed soil and ruins of rocks, which appear to have been often displaced by the sea; the great accumulation of which, in the southern hemisphere, leads to a supposition that the seas alternately preponderate in each hemisphere. The *interior* of the earth is entirely unknown to us, as the depth to which we have been able to penetrate is nothing in comparison with its diameter: it is useless therefore to speculate on the various hypotheses regarding its formation.——*Motion of the Earth.* The earth has a triple motion. 1. A diurnal motion round its own axis, from west to east, in 24 hours, which occasions the perpetual succession of days and nights. 2. An annual motion round the sun in a year, which produces the different seasons, and the lengthening and shortening of days. 3. That motion by which the poles of the world revolve about the poles of the ecliptic, and occasion what is commonly called the precession of the equinoxes, or more properly, the retrogression of the earth's nodes.—The theory of the motion of the earth has become memorable in the history of the human mind, showing, as it does, a marked ability in man to resist the impressions produced by appearances, and to believe the contrary of that which had been believed and taught for many centuries. The invention of the telescope, by means of which the rotation of Jupiter was soon observed, but still more

MODERN GEOLOGISTS HAVE DISCOVERED THAT EACH SUCCESSIVE MINERAL BED IS THE SEPULCHRE OF A PECULIAR COLONY OF SHELL-FISH.

Newton's discovery of universal gravity, and of the nature of the celestial motions, established the theory of the earth's motion; and, in modern times, no man of intelligence any longer doubts it.

EARTH'ENWARE, or POTTERY. Under the head "CHINA-WARE" will be found such observations as would be perfectly applicable here: we therefore beg to refer to it. We shall, however, devote a few sentences to the state of its manufacture in this country, particularly as regards its rise and present importance in the district called the Potteries in Staffordshire. The Potteries comprise a number of villages, with a population amounting to above 60,000, by far the greater proportion of which is engaged in the manufacture; and it is believed that when Mr. Wedgwood began his discoveries and brought forward his improvements there in 1760, the population was scarcely one third of that number. The best clay from which the Staffordshire ware is made, comes from Dorsetshire; and a second quality from Devonshire. It is composed of about 24 parts of alumine, and 76 of silica, with some other ingredients in very small proportions. This clay is very refractory in high heats, a property which, joined to its whiteness when burned, renders it peculiarly valuable for pottery. It is also the basis of all the yellow biscuit-ware called "cream colour," and in general of what is called the "printing body;" as also for the semi-vitrified porcelain of Wedgwood's invention, and of the tender porcelain. It is estimated that the value of the different sorts of earthenware produced at the Potteries may amount to 1,500,000*l.* a-year; and that the earthenware produced at Worcester, Derby, and other parts of the country, may amount to about 750,000*l.*; making the whole value of the manufacture 2,250,000*l.* a-year. It has with great truth been said, that there is scarcely any manufacture which is so interesting to contemplate in its gradual improvement and extension as that of earthenware, presenting, as it does, so beautiful a union of science and art, in furnishing us with the comforts and ornaments of civilized life. Formed from substances originally of no value, the fabrication has induced labour of such various classes, and created skill of such various degrees, that nearly the whole value of the annual produce may be considered an addition made to the mass of national wealth.

EARTH'QUAKE, a concussion or vibration of the ground, usually preceded by a rattling sound in the air, or by a subterraneous rumbling noise; and sometimes accompanied by rents, and by shaking of the surface, so as to swallow up towns and tracts of country. At one time it is hardly perceptible; at another, it is so violent, that it not only demolishes the works of art, but changes the appearance of the ground itself. Sometimes the surface of the ground remains unbroken; sometimes it bursts open into clefts and chasms; and then occasionally appears the phenomenon of the eruption of gases, and also of flames, with the ejection of water, mud, and stones, as in volcanic eruptions. Volcanoes are, indeed, only so many spiracles serving for the discharge of this subterranean fire, when it is thus assembled; and where there happens to be such a structure and conformation of the interior parts of the earth, that the fire may pass freely and without impediment from the caverns therein, it gathers into these spiracles, and then readily and easily gets out from time to time without shaking or disturbing the earth: but where a communication is wanting, or the passages are not sufficiently large and open, so that it cannot come at these spiracles, without first forcing and removing all obstacles, it heaves up and shakes the earth, till it makes its way to the mouth of the volcano; where it rushes forth, sometimes in flames of vast volume and velocity. Earthquakes are sometimes confined to a narrow space, which is properly the effect of the re-action of the fire; and they shake the earth just as the explosion of a powder-magazine causes a sensible concussion at the distance of several leagues. These observations furnish grounds for the conclusion, that earthquakes cannot proceed from external causes, but arise from certain powers operating within the circumference or crust of the earth. The subterranean, thunder-like noises; the shaking, raising, and bursting asunder of the earth; the emission of fire and flames, and the ejection of mineral substances; all occur, occasionally, in earthquakes as well as in volcanic eruptions, even when at a distance from active volcanoes. All the observations, in fact, that have been made, tend to prove, that earthquakes and volcanic eruptions are effects of the same chemical process (so to speak), which must have its seat at a great depth beneath the earth's surface.

EARTH'ING, in agriculture and gardening, signifies the covering of shrubs and plants, as vines, celery, &c. with earth.

EARTH'-NUT, a kind of plant, the pods or nuts of which ripen under ground. The nuts yield a quantity of oil.

EARTH'-WORM, a worm bred under ground, being the common species of the worm.

EARTHS, in a popular sense, may be considered those solid bodies composing the mineral strata, which are incombustible, colourless, not convertible into metals by all the ordinary methods of reduction, or, when reduced by scientific experiments, possessing but an evanescent metallic existence. But, to describe *earths* according to the rules of chemical science, we should say, that they are tasteless, inodorous, uninflammable substances, occurring in intimate union with each other, and with various acids and metallic oxydes. Under these circumstances, they constitute by far the greatest part of the strata, gravel, and soil, forming the mountains, plains, and valleys of our globe. Their number is ten, and their names are *silex*, *alumina*, *magne-*

sia, lime, barytes, strontites, zircon, glucine, yttria, and *thorina;* the properties of which we have noticed in their several places. The earths were regarded as simple bodies until the brilliant researches of Sir H. Davy proved them to be compounds of oxygen with peculiar bases.

EAR'-TRUMPET, an instrument used by persons partially deaf, to strengthen the sensation of sound, by collecting and conducting it through a funnel-shaped tube to the seat of the sense of hearing.

EAR'WIG, in entomology, the *Forficula auricularia,* an insect with sheath wings, which was formerly imagined to creep into the ear, but this idea does not appear to be borne out by the fact. If, however, such should happen, a piece of an apple applied to the orifice is said to entice the insect, and thus relieve the sufferer; or where this fails, a few drops of sweet oil will destroy the life of the earwig, which must then be carefully extracted with a proper instrument.

E'ASEL, a wooden frame on which a painter sets the cloth, &c. to be painted. ——*Easel-pieces,* such pieces as are painted on easels, in distinction to those painted on ceilings, &c.

E'ASEMENT, in law, a privilege or convenience which one man has of another, whether by charter or prescription, without profit; such as a way through his lands, &c.

E'ASING, in sea language, the slackening a rope, &c.; thus, to ease the bow-line or sheet, is to let them go slacker; to ease the helm, is to let the ship go more before the wind, or more larboard.

EAST, one of the four cardinal points of the world; being that point of the horizon where the sun is seen to rise when in the equator.—The word *east* is indefinitely used when we speak of countries which lie eastward of us, as Persia, India, China, &c.—— In Christian churches, which are generally built east and west, the chancel stands at the east end, with an emblematic reference to Christ, who is called the Sun of Righteousness and the Day-spring.

E'ASTER, a solemn festival observed among Christians, in commemoration of Christ's resurrection. The Greeks and Latins call it *pascha;* a Hebrew word, applied to the Jewish feast of the passover, to which the Christian festival of Easter corresponds. Thus, St. Paul says (1 Cor. v. 7.), "For even Christ our passover is sacrificed for us." This feast was fixed by the council of Nice, in the year 325, to be held on the Sunday which falls upon or immediately after the full moon which happens next after the twenty-first of March; and as such it stands in the rubric of the church of England.—The English name *Easter,* and the German *Ostern,* are supposed to be derived from the name of the feast of the Teutonic goddess *Ostera,* celebrated by the ancient Saxons early in the spring, and for which, as in many other instances, the first missionaries wisely substituted the Christian festival.

E'ASTERLING, a coin struck by Richard II., which is supposed to have given rise to the name of sterling, as applied to English money.

E'ASTER-OF'FERINGS, or EASTER-DUES, small sums of money paid to the parochial clergyman by the parishioners.

EAST-INDIA COMPANY,—"the Governor and Company of Merchants of London trading to the East Indies,"—the most celebrated commercial association either of ancient or modern times, which has extended its sway over the whole of the Mogul empire,—was incorporated about the 42nd of queen Elizabeth, A.D. 1600, and empowered to trade to countries to the eastward of the Cape of Good Hope, exclusive of all others. A variety of causes had been long operating in favour of such an incorporation. Several very valuable East India ships had been taken from the Portuguese and Spaniards by the English fleets, and awakened the cupidity of our merchants to the obtaining a share in a traffic which promised such great advantages. At length, in 1593, an armament fitted out for the East Indies by Sir Walter Raleigh, and commanded by Sir John Borroughs, fell in with, near the Azores, the largest of all the Portuguese carracks, a ship of 1600 tons burden carrying 700 men and 36 brass cannon; and, after an obstinate conflict, carried her into Dartmouth. She was the largest vessel that had been seen in England; and her cargo, consisting of gold, spices, calicoes, silks, pearls, drugs, porcelain, ivory, &c., excited the ardour of the English to engage in so opulent a commerce. About the year 1698, application being made to parliament by private merchants, for laying this trade open, an act passed empowering every subject of England, upon raising a sum of money, for the supply of the government, to trade to those parts. A great subscription was accordingly raised, and the subscribers were styled the New East-India Company; but the old establishment being in possession of all the forts on the coast of India, the new one found it its interest to unite; and both, trading with one joint stock, have ever since been known under one name, viz. *The United East-India Company.* Many and severe have been the contests between the advocates of a free trade to India, and the friends of the "incorporated company;" but at length the long-supported monopoly of that powerful body yielded to the act 3 and 4 Will. 4. c. 85., for continuing the charter till 1854, which, in fact, has put a limit to the Company's commercial character, by enacting that its trade to China was to cease on the 22nd of April, 1834, and that the Company was, as soon as possible after that date, to dispose of their stocks on hand, and close their commercial business. The functions of the East-India Company are now, therefore, wholly political. She is to continue to govern India, with the concurrence and under the supervision of the Board of Control, till the 30th of April, 1854.——"The *territorial revenues* at the disposal of the

East-India Company (says Mr. McCulloch) have, for a lengthened period, equalled those of the most powerful monarchies. At present they are greater than those of either Russia or Austria, being inferior only to those of Great Britain and France! Still, however, the Company's financial situation is the very reverse of prosperous. Vast as their revenue has been, their expenditure appears, in most instances, to have been still larger; and at this moment their debts exceed 60,000,000*l.* !" Let us now take a glimpse of it as it existed in the days of imperial Rome. In the age of Nero, the East-India trade was carried on by the river Nile; the merchandize proceeded in caravans to the Red Sea, where it was embarked for the Indian Ocean. The specie annually carried from Rome, upon this account, according to Pliny's computation, amounted to about 300,000*l.* sterling; and the usual returns, which arrived in December and January, yielded, in clear gain, a hundred for one!

EAU DE COLOGNE, a far-famed fragrant liquid, resorted to by the votaries of fashion, in this and many other countries, as a panacea against ailments of every kind; and it consequently forms an expensive companion of the toilet. It is nothing more or less than alcohol highly aromatized; but the ingredients are numerous, and should be compounded with great nicety.

EAU DE LUCE, a volatile preparation, made of white soap dissolved in alcohol, and the solution mixed with the spirit of sal ammonia.

EAVES, the edges of the roof of a house, which overhang the wall, for the purpose of throwing off the water.

E'AVES-DROPPER, one who skulks under the eaves of houses, for the purpose of listening to what passes within.

EBB, the retirement or reflux of the tide.

EB'ONY, a hard, heavy, durable, black wood, which admits of a fine polish. It is the wood of the *Diospyrus ebenus*, or eben tree, which grows in India, Madagascar, Ceylon, and the Mauritius. It is wrought into toys, and used for mosaic and inlaid work.

EBOU'LEMENT, in fortification, the crumbling or falling away of a wall or rampart.

EBRAC'TEATE, in botany, without a bractea or floral leaf.

EBULLI''TION, either the operation of boiling, or the effervescence which arises from the mixture of an acid and an alkaline liquor.

ECAU'DATE, in botany, an epithet for plants which have no tail or spur.

EC'BASIS, in rhetoric, those parts of the proemium in which the orator treats of things according to their events or consequences.

EC'BOLE, in rhetoric, a digression whereby the speaker introduces some other person speaking in his own words.

EC'CE HO'MO, (Latin); "Behold the man!" a painting which represents our Saviour, with a crown of thorns on his head, given up to the people by Pilate. The title of it is taken from Pilate's exclamation, John xix. 5.

ECCEN'TRIC, in geometry, a term applied to circles and spheres which have not the same centre, and consequently are not parallel.—It also denotes a deviation from usual practice or established forms; as *eccentric* conduct.——*Eccentric circle*, in astronomy, the circle that circumscribes the elliptical orbit of the planet.

ECCENTRI''CITY, in astronomy, the distance between the sun and the centre of the eccentric.

ECCHYM'OSIS, in medicine, an appearance of livid spots on the skin occasioned by an extravasation of the blood from a vein betwixt the flesh and skin.

ECCLE'SIANS, an epithet formerly given to those who stood up for the spiritual authority of the church in opposition to the civil power.

ECCLESIAS'TES, a canonical book of the Old Testament, the design of which is to show the vanity of all sublunary things. The generality of commentators believe this book to be the produce of Solomon's repentance, after having experienced all the follies and pleasures of life.

ECCLESIAS'TIC, a person in orders; one who is consecrated to the service of the church and the ministry of religion.

ECCLESIAS'TICUS, an apocryphal book of Scripture; so called from its being read in the church, *(ecclesia)*, as a book of piety and instruction, but not of infallible authority. The author of this book was a Jew, called Jesus the son of Sirach. The Greeks call it the wisdom of the son of Sirach.

ECCOPROT'IC, in medicine, a mild cathartic. Any medical preparations having the quality of promoting gentle alvine discharges are so called.

ECHELON', a term in military tactics borrowed from the French, signifying the position of an army with one division more advanced than another, somewhat like the steps of a ladder. A battalion, regiment, &c. marches *en echelon*, if the divisions of which it is composed do not march in one line, but on parallel lines. The divisions are not exactly behind each other, but each is to the right or left of the one preceding, so as to give the whole the appearance of a stairway. This order is used if the commander wishes to bring one part of a mass into action, and to reserve the other. The word *literally* means a ladder or stairway.

ECH'INATE, or ECH'INATED, a term given to whatever is prickly, or like the hedgehog; having sharp points; bristled.——In botany, an epithet for the seeds of plants that are rough and prickly; also for the pericarp of some plants.

ECH'INITES, a fossil called *centronia*, frequently found in chalk-pits; a calcareous petrifaction of the echinus or sea-hedgehog.

ECHI'NOPS, or Globe-thistle, in botany, a genus of plants, class 19 *Syngenesia*, order 5 *Polygamia-segregata*; the flower of which is compound; consisting of a great

number of floscules or small flowers, divided into several acute segments.

ECHNOPH'ORA, in botany, a genus of the *pentandria-digynia* class of plants, the corolla of which consists of five unequal patulous petals.

ECH'INUS, in ichthyology, a shell-fish set with prickles or spines; a genus of *Mollusca*. The *Echinus esculentus*, or edible sea-egg, is common on the coast of Europe, and is esteemed as an article of food. There are several species of the echinus, which have an orbicular, oval, or globular body, covered with spines. By means of these spines the animals change their position, and move from place to place. They are said to retreat to deep water on the approach of a storm, and preserve themselves from injury by attaching themselves to submarine bodies.——With botanists, a prickly head or top of a plant.——In architecture, a member or ornament near the bottom of the Ionic, Corinthian, and Composite capitals; so named from its roughness.

EC'HIUM, or Viper's-bugloss, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are shrubs: the flower consists of a single petal, the tube being very short, and the limb erect, growing gradually wider at the extremity, where it is divided into five unequal segments.

EC'HO, a sound reflected or reverberated from some hard surface, and thence returned or repeated to the ear. As the undulatory motion of the air, which constitutes sound, is propagated in all directions from the sounding body, it will frequently happen that the air, in performing its vibrations, will impinge against various objects, which will reflect it back, and so cause new vibrations the contrary way: now if the objects are so situated as to reflect a sufficient number of vibrations back, viz. such as proceed different ways, to the same place, the second will be there repeated, and is called an echo; and the greater the distance of the object is, the longer will be the time before the repetition is heard: and when the sound, in its progress, meets with objects at different distances, sufficient to produce an echo, the same sound will be repeated several times successively, according to the different distances of these objects from the sounding body, which makes what is called a *repeated echo*. Echoes are not, however, caused by a mere repulsion of the sonorous particles of air, for then every hard substance would produce an echo; but it is supposed to require a certain degree of concavity in the repelling body, which collects several diverging lines of sound, and concentrates them in the place where the echo is audible, or, at least, reflects them in parallel lines, without weakening the sound, as a concave mirror collects in a focus the diverging rays of light, or sometimes sends them back parallel. The celebrated echo at Woodstock, in Oxfordshire, repeats the same sound fifty times. But the most singular echo we have ever heard of is that near Rosneath, a few miles from Glasgow. If a person placed at a proper distance from this echo plays eight or ten notes of a tune with a trumpet, they are correctly repeated by the echo, but a third lower; after a short pause, another repetition is heard, in a lower tone; and then, after another interval, a third repetition follows in a still lower tone.—As the reflection of sound depends on the same laws as those which regulate the reflection of light, on which the science of catoptrics depends, the doctrine of echoes is sometimes called the *catoptrics of sound*; the place of the sounding body is called the *phonic* centre, and the reflecting place or object, the *phonocamptic* centre.—— ECHO, in architecture, any vault or arch constructed so as to produce an artificial echo. These are generally of a parabolic or elliptic form: of this kind is the whispering-gallery in St. Paul's cathedral.——*Echo*, in poetry, a sort of verse which returns the sound of the last syllable, the elegance of which consists in giving a new sense to the last words.

ECHOM'ETER, among musicians, a kind of scale or rule, serving to measure the duration and length of sounds, and to find their intervals and ratios.

ECLAIR'CISSEMENT, the clearing up of any thing not before understood.

ECLAMP'SIS, in medical science, scintillations or flashings of light which dart from the eyes; a symptom of epilepsy.

ECLA'T, (French), a burst of applause; renown or approbation following some action or event.

ECLEGM', a medicine made by the incorporation of oil with syrups.

ECLEC'TICS, those philosophers who, without attaching themselves to any particular sect, select whatever appears to them the best and most rational from each.—— The *Eclectics* were a sect of Greek philosophers who endeavoured to mould the doctrines of Pythagoras and Plato, and blend them with the theology of the Egyptians, and the tenets of Zoroaster. They borrowed many of the principal truths of Christianity from the catechetic school of Alexandria, and blending these with the mysticism of Pythagoras, the errors of Plato, and the superstition of Egypt, they hoped to reconcile the Christians and Pagans to the same opinions.

ECLIP'SE, in astronomy, an interception or obscuration of the light of the sun, moon, or other luminary, by the interposition of another heavenly body between it and our sight. An eclipse of the *sun* is caused by the intervention of the moon, which totally or partially hides the sun's disc; an eclipse of the *moon* is occasioned by the shadow of the earth, which falls on it and obscures it in whole or in part, but does not entirely conceal it. In endeavouring to understand the true nature of eclipses, the mind must figure to itself the body of the sun, irradiating the earth on one side of its globe, which, being a solid body, intercepts the rays, and therefore projects a long shadow from its opposite side: now, when the moon happens to

IN A REAL ECHO, THE FIRST SOUND IS FROM NEAR SURFACES; THE SECOND, OR REPEATED ECHO, FROM SURFACES AT A DISTANCE.
OR ARTIFICIAL ECHO, FROM SURFACES AT A DISTANCE.

THE DARK OR CENTRAL PART OF THE MOON'S SHADOW, IS CALLED THE "UMBRA;" THE LIGHTER PART IS CALLED THE "PENUMBRA."

POLITICAL ECONOMY HAS BEEN SO MISUNDERSTOOD BY DABBLERS IN THE SCIENCE, THAT IT HAS GIVEN RISE TO THE WILDEST THEORIES.

come in a line with this shadow, it falls upon her, and she is eclipsed. An eclipse of the moon is *partial*, when only a part of its disc is within the shadow of the earth; it is *total*, when all its disc is within the shadow; and it is *central*, when the centre of the earth's shadow falls upon the centre of the moon's disc. As the moon is actually deprived of her light during an eclipse, every inhabitant upon the face of the earth, who sees the moon, sees the eclipse. An eclipse of the sun, as we have said, happens when the moon, passing between the sun and the earth, intercepts the sun's light; and the sun can only be eclipsed at the new moon, or when the moon, at its conjunction, is in or near one of its nodes. An eclipse of the sun begins on the western side of his disc, and ends on the eastern; and an eclipse of the moon begins on the eastern side of her disc, and ends on the western.——The ancient Greeks and Romans had frightful ideas of eclipses, supposing them presages of the most dismal events. At Rome it was not allowed to speak publicly of any natural causes of eclipses.

ECLIP'TA, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia-superflua*. The species are all annuals.

ECLIP'TIC, in astronomy, the sun's path; or, a great circle of the celestial sphere, supposed to be drawn through the middle of the zodiac; or it may be defined, that circle of stars in the heavens, through which the earth would appear to move, if it were seen from the sun. The axis of the earth is, however, not perpendicular to the plane or level of the ecliptic, but declines from the perpendicular 23 degs. 28 min., which position it maintains throughout the orbit, causing the variations in the length of the day, and the four seasons.——*Ecliptic*, in geography, a great circle on the terrestrial globe, not only answering to, but falling within the plane of the celestial ecliptic.

EC'LOGUE, in poetry, a pastoral composition, in which shepherds are introduced conversing with each other, as the *eclogues* of Virgil. It is also used to denote any little elegant composition, written in a simple natural style and manner.

ECON'OMY, the frugal expenditure of money, with the prudent management of all the means by which property is saved or accumulated. It also means, a judicious application of time and labour. In a more extended sense, it denotes the regulation and disposition of the affairs of a state or nation, which is called *political economy*. And it is likewise applied to the regular operations of nature in the generation, nutrition, and preservation of animals or plants; as, animal *economy*, vegetable *economy*.

ECPHONE'SIS, in rhetoric, a figure of speech used by an orator to give utterance to the warmth of his feelings.

ECPHRAC'TIC, in medicine, that which has the property of dissolving or attenuating viscid matter and of removing obstructions.

ECPHYSE'SIS, in medicine, a quick breathing.

ECPIES'MA, in medicine, a fracture of the cranium when the bones press inwardly on the membranes of the brain.

ECPLEX'IS, in medicine, that state of motionless stupor in which a person appears to lie when in a trance.

ECRYTH'MUS, in medicine, a term applied to pulses which are entirely out of order.

ECS'TASY, that state of the mind in which the functions of the senses are either suspended or transported with raptures, by the contemplation of some extraordinary object.——In medicine, a species of catalepsy, when the person remembers, after the paroxysm is over, the ideas he had during the fit.

ECSTAT'ICI, a sort of diviners amongst the Greeks, who for a considerable time lay in trances, deprived of all sense and motion, but when they returned to their former state, gave strange accounts of what they had seen and heard during their absence from the body.

ECTRO'PIUM, in surgery, is when the eye-lids are inverted, or retracted, so as to show their internal or red surface, and cannot sufficiently cover the eye. Sometimes this is a simple or original disorder, and sometimes only a symptom, or consequence of another, as an inflammation, tumour, &c.

EC'TYPE, a word sometimes used by antiquarians, signifying an impression of a medal, seal, or ring, or a figured copy of an inscription or other ancient monument.

ED'DY, a current of water running in a contrary direction to the main stream.——*Eddy-tide*, or *Eddy-water*, the water which runs back contrary to the tide; or that which falls back on the rudder of a ship under sail, called *dead-water*.——*Eddy-wind*, the wind returned or beat back by any obstruction.

ED'ELITE, in mineralogy, a siliceous stone of a light gray colour.

EDEM'ATOUS, or ŒDEM'ATOUS, in medicine, an epithet denoting a white, soft, and insensible tumour.

EDGE, in a general sense, denotes the side or border of any thing; but is more particularly used for the sharp side of some weapon, instrument, or tool; as the *edge* of a sword, razor, &c.

EDG'INGS, in gardening, the series of small but durable plants, set round the edges or borders of flower-beds, &c.; as, an *edging* of box.

E'DICT, an order issued by a prince to his subjects, as a rule or law requiring obedience. In Roman history we frequently meet with the edicts of the emperors and the edicts of the prætors, containing notices to the people in what manner they intended to execute the laws.——*Edictum perpetuum* was a collection of all the laws which had been yearly published by the prætors in their edicts. It was so called because it was intended to continue in force

THE ROMAN PRÆTORS RETAINED THEIR PRIVILEGE OF ISSUING EDICTS, TILL ALL LEGISLATIVE POWER FELL INTO THE HANDS OF THE EMPERORS.

THE ENQUIRIES OF A CHILD OUGHT TO BE ANSWERED READILY; FOR BY THAT MEANS HE WILL OFTEN BE EXCITED TO THE PURSUIT OF KNOWLEDGE.

for ever, and serve as a guide and rule in the administration of justice throughout the empire.

EDI'TION, one impression of any book, or the whole number of copies published at once; as the twelfth *edition*.

ED'ITOR, a person who revises, corrects, and prepares a book for publication; or who furnishes the most important matter, and superintends the literary arrangement of, a newspaper, &c.——That which pertains to an *Editor* is termed *editorial;* and his duty is called *editorship*.

EDUCATION. This word has a most comprehensive signification, embracing subjects pregnant with interest to every civilized being; yet we may safely affirm, that nothing within the range of human intellect is more imperfectly understood, or gives rise to so much senseless disputation. Nothing, in fact, is more shackled by prejudices, more perverted by fanciful theorists, or more abused by the unblushing effrontery of ignorant and artful empirics, than EDUCATION. By the magic power of this all-absorbing topic, the pseudo-politician essays to reach the envied pinnacle of popularity; it serves the restless demagogue as an alembic for his sedition; while notorious charlatans, whose projected "systems" of instruction are as rife as they are ridiculous, diligently ply with crafty bubble-mongers, till some amorphous scheme for plundering the credulous public appears, under the specious device of National Education!—It is not too much, then, to assume, that according as this intellectual nutriment is administered, it becomes the germ of happiness, or misery, to the human race; and hence arises our regret to see it so basely prostituted.—In the ordinary sense of the word, it embraces all that series of instruction and discipline, in literature, in arts, and in science, by which the understanding is enlarged, and the manners and habits of youth formed for society. But there is a still more important feature in education—one which involves a higher duty—the duty of imbuing the youthful mind with sound principles in religion, morals, and obedience to the laws. Without these, social virtue ceases to exist, patriotism degenerates into factious discontent, and the path of life is ever after beset with thorns and briars. Were we satisfied that it was in our power to write such an essay on education as the theme deserves, a niche in this volume would not afford sufficient space for us to do the subject justice; but, independently of this, we are not ashamed to confess that it infinitely transcends our utmost ability. We will, however, embrace the present opportunity of quoting a few detached passages from the writings of Dr. Vicesimus Knox, a man whose profound erudition and varied acquirements peculiarly fitted him for the office of a Mentor. "There are, he observes, two kinds of education; one of them confined, the other enlarged; one which only tends to qualify for a particular sphere of action, for a profession, or an official employment; the other, which endeavours to improve the powers of the understanding for their own sake; for the sake of exalting the endowments of human nature, and rendering it capable of sublime and refined contemplation. It constitutes a broad and a strong basis, on which any kind of superstructure may afterwards be raised. It furnishes a power of finding satisfactory amusement for those hours of solitude, which every man must sometimes know, in the busiest walks of life; and it constitutes one of the best supports of old age, as well as the most graceful ornaments of manhood. Even in the commercial department it is greatly desirable; for besides that it gives a grace to the man in the active stage of life, and in the midst of his negociations, it enables him to enjoy his retreat with elegance, when his industry has accumulated an ample fortune. * * * I most anxiously wish that a due attention may be paid to my exhortations, when I recommend great and exemplary diligence. All that is excellent in learning depends upon it. And how can the time of a boy, or young man be better employed? It cannot be more pleasantly: for I am sure that industry, by presenting a succession of various objects, and by precluding the listlessness of inaction, renders life at all stages of it agreeable, and particularly so in the restless season of youth. It cannot be more innocently, for learning has a connection with virtue; and he whose time is fully engaged, will escape many vices and much misery. It cannot be more usefully; for he who furnishes his mind with ideas, and strengthens his faculties, is preparing himself to become a valuable member of society, whatever place in it he may obtain. * * * The truth is, that polite learning is found by experience to be friendly to all that is amiable and laudable in social intercourse: friendly to morality. It has a secret, but powerful, influence in softening and meliorating the disposition. True and correct taste directly tends to restrain the extravagancies of passion, by regulating that nurse of passion, a disordered imagination. Indeed, however highly I estimate knowledge, and however I admire the works of a fine fancy; yet I will not cease to inculcate on the minds of studious youth, that goodness of heart is superior to intellectual excellence, and the possession of innocence more to be desired than taste. At the same time I cannot help feeling and expressing an ardent wish, that those amiable qualities may always be combined, and that the noblest of all sublunary objects may more frequently be produced, an all-accomplished man! a character, perfectly polite, yet neither vain, affected, nor superficial; elegantly and deeply learned, yet neither sceptical nor pedantic; that a graceful manner and a pleasing address may be the result; not of artifice but of a sincere and a benevolent heart; and that all the lovely and valuable qualities, whether exterior or internal, may operate in augmenting the general sum of human happiness, while they advance the dignity, and

NEVER SPORT WITH THE CREDULITY OF CHILDREN, BY ANSWERING THEIR INNOCENT QUESTIONS IN A LUDICROUS, UNSATISFACTORY, OR DECEITFUL MANNER.

increase the satisfactions, of the individual. * * * It is no wonder that visionary writers on education are greatly admired, though their directions can seldom be pursued. Innovation is indeed found to be so agreeable to the human mind, and is received by the unexperienced and injudicious with such avidity, that it becomes expedient to stand up in defence of those established practices, which, besides that they were originally reasonable, have been countenanced and supported by the uniform decisions of long experience. * * * I am the rather induced to defend that discipline which lays the foundation of improvement in ancient learning, because I think, and am not singular in the opinion, that not only the taste, but the religion, the virtue, and, I will add, the liberties of our countrymen, greatly depend upon its continuance. True patriotism and true valour originate from that enlargement of mind, which the well-regulated study of philosophy, poetry, and history, tends to produce; and if we can recal the ancient discipline, we may perhaps recal the generous spirit of ancient virtue." * * * With the foregoing extracts we might very properly conclude; but we are tempted to proceed; and we trust that the sound and wholesome remarks, which we thus glean, will make ample amends for the unusual length to which this article is extended. "When I turn my attention to my own country," says the venerable author, "I am willing to indulge the pleasing idea, that I see something in the national character of Englishmen, similar to the spirit of an ancient Roman. Of the Roman, a gravity and a dignity were the striking features. I mean not the disgusting severity of a puritanical exterior; but that respectable appearance, which naturally results from sentiments uniformly great; a gravity unallied to dulness, a dignity unconnected with opulence. My opinion of this flattering resemblance is not the effect of an unphilosophical predilection, or fortuitously adopted. It is suggested by observation, and confirmed by a review of the annals of the English. It is confirmed by their public conduct, ever generous, spirited, humane; by their private lives, sedate, contemplative, independent; by their writings, solid, nervous, and breathing a spirit of freedom and philanthropy, which almost rescues human nature from the imputation of degeneracy." * * * In another place he says, "I am not one of those who would promote the most distant tendency to despotism; but I would promote order and tranquillity, the most valuable ends of civilization. And I will assert, that when the persons of the rulers, in any department of the state, are rendered contemptible, the reverence necessary to restrain the vulgar is removed, and it is not wonderful that the consequences are riot and rebellion! Look into the senate of an empire in extent, connections, resources, and glories unrivalled. I will not be personal, though personality, in the present age, is the readiest method to excite popular attention. I will say nothing of the dissipated youth, the virulent rancour, the petulant abuse, the infidel principles, or the debauched morals, of any one senator: the senatorial rank should consecrate the persons who possess it." * * * And again, alluding to our religious institutions, he says, "If you have courage enough publicly to avow a primitive zeal for the cause of Protestantism, or for many of these virtuous sentiments and wholesome practices of our good old English forefathers, immediately some *travelled* gentleman steps forth, and finically exclaims, How narrow-minded, how illiberal, how unphilosophical, in these enlightened times, such antiquated ideas! Universal libertinism restrained only by *political* compliance with what every prater terms vulgar prejudice, forms the wisdom of these large-minded, liberal, and philosophical gentlemen. * * * But how is this levity to be shunned, and the national character restored? Adversity is a severe remedy for political disease, and not to be wished for till every lenient method has failed. A radical cure may be effected, *by restoring vigour to the proper modes of education.* Let the mind be early habituated to something solid for the employment of its energies; let it be supplied with food which will nourish and add strength and agility, not with such as only bloats, or overloads with morbid matter. Let the uncorrupted bosom of ingenuous youth imbibe the spirit, the virtue, the elevation of sentiment, and the rational love of liberty, which exalted the polished ancients to all that is great and glorious in this sublunary scene." * * * Then, having apostrophised the all-engrossing topics of public life, he exclaims, "I will not derogate from the glory of arms, or the merit of political conflicts; but I will say, that he effects a durable and substantial good to society, who successfully labours in adding to the *personal merit* of a rising generation. He sows the seeds of excellence, which may spring up in a happy soil to aggrandize a kingdom; and of virtues, which may in future ages bless and exalt human nature."—Another experienced writer in speaking of legislative interference, appositely says, "a little consideration will convince the man of a thinking mind, that the prescriptions of civil authority universally act as barriers to the improvement of the arts. The language of these prescriptions is, "hitherto shalt thou go, but no farther." It is, however, the business of education not to cramp but to guide the intellect. Its province extends to the inculcating of those fundamental principles upon which the structure of science is said to be built; the finishing of the structure ought to be left in a great measure to individual discretion. To the attainment of truth, freedom of inquiry is absolutely essential. A man may as well attempt to penetrate the mazes of an entangled wood in fetters, as to investigate the vast variety of intellectual subjects, with a mind trammelled by the imperative deci-

sions of human institutions. And to the reducing of the general mind to this degrading predicament, do the prescriptions of civil authority in matters of literature usually tend. They lead to the fostering of prejudice, and to the perpetuation of error. They necessarily keep a nation stationary in the march of intellect, and repress that expansion of thought which is the parent of excellence. To a certain degree they may be productive of decided and powerful effects; but the uniformity of habit and character which they are calculated to produce, rather tends to lower man to the level of brutal instinct, than to raise him higher in the scale of the intelligent creation.——In conclusion, we beg to offer the following extract on the *education of females*: "In the estimation of reason, a lovely woman cannot be rendered less lovely, by the high cultivation of her talents; and many examples may be quoted to prove, that intellectual attainments are so far from being inconsistent with feminine graces, that they confer upon them additional attractions. In the mean time, let not domestic accomplishments be despised. On the contrary, let them be cultivated with the most diligent attention. But why should any portion of the field of knowledge be interdicted to any rational creature, who has an opportunity and who entertains a wish to enter it? and why should females be debarred from a source of elegant amusement, and of useful instruction peculiarly adapted to their domestic habits? The conduct of learned females is watched with an evil eye: their foibles are magnified; their errors are exaggerated; and whatever faults they commit, are laid to the account of literature, with the candour and good sense evinced by the self-complacent ignorant, who, on seeing a man executed for forgery, exclaimed, "such are the consequences of reading and writing!" When we consider what influence the female sex have in directing the early ideas of man, and also upon the habits of his future life, it is surely desirable that they should be endowed with every species of knowledge conveniently within their reach, which may turn that influence to good."——*Education in Greece and Rome.* The education of youth was strictly attended to both amongst the Greeks and Romans. Their minds and bodies were improved at the same time; their minds by every necessary branch of knowledge and learning, and their bodies by the manly exercises of the Campus Martius, or private contests and trials of skill, agility, and strength. It was the chief aim of the Romans, as well as Grecians, to make them shine in the senate and in the field, at the forum and the public games.—Oratory was an object which they kept constantly in view; and whatever was their destination, they endeavoured to acquire the arts of elocution and a habit of fluent reasoning. Lacedæmon trained her hardy sons to despise danger, endure fatigue, and seem insensible of pain—to maintain their honour unstained, to love their country, and hold in contempt riches, and all that train of enervating pleasures which are the companions of affluence.—So far all this was meritorious in a high degree; but how circumscribed must the space have been which was then allowed for intellectual exertion, when the whole world of science was a *terra incognita.*

EDULCORA'TION, in chemistry, the act of separating, purifying, or freeing any substance from the saline particles with which it may be impregnated, or those that may be left adhering to it after any operation.

EEL, in ichthyology, a genus of fishes belonging to the order *Apodes*, of which the common species are very long lived, viviparous, prolific, and torpid in winter; living on insects, worms, and eggs of other fish. In some respects eels resemble reptiles, particularly in their manner of moving by a serpentine winding of the body; and they often creep upon land, and wander about at night in search of snails and other food.

EEL-POUT, a species of *Gadus*, somewhat resembling an eel, but shorter. It is sometimes called *mustela-fluviatilis.*

EEL'-SPEAR, a forked instrument with three or four jagged teeth, used for catching eels.

EFFECT', the consequence of a cause, sometimes simple and visible, sometimes complicated and invisible, but always simultaneous with the cause.——The word *effects* signify personal or movable goods.

EFFECTIVE, in military language, an epithet for a body of men that are fit for service: as 20,000 *effective* men.

EFFEMINACY, that weakness, delicacy, and indulgence in womanish pleasures which are characteristic of the female sex, but which in men are deemed a reproach.

EFFE'TE, barren. An animal becomes *effete* by losing the power of conception: the earth may be rendered so by drought, or by exhaustion of fertility.

EFFERVES'CENCE, in a general sense, signifies a slight degree of ebullition in liquors exposed to a due degree of heat; but chemists apply it to that commotion excited in various fluids, either by the mixture of fluids with others of a different nature, or by mixing them with salts or powders of various kinds, as the effervescence of a carbonate with nitric acid.

EFFI'CIENT, producing the effect intended. The *efficient cause* is that which produces; the *final cause* is that for which it is produced.

EFFLORES'CENCE, in chemistry, the spontaneous formation of small white threads, resembling the sublimated matter called flowers, on the surface of certain substances: this is sometimes called a *saline vegetation.* An efflorescence is also often seen on salt butter, or on walls formed with plaster. The word is likewise applied to the conversion of any body into a dry powder, or white dust, as in sulphate and carbonate of soda.

EFFLU'VIA, the small particles perpetually flowing out of mixed bodies in the form of vapours, which are sometimes visible, as in the case of smoke or steam; and sometimes not perceptible, as the noxious exhalations from putrefying animal or vegetable substances. Malignant effluvia are assigned, by physicians, as the cause of the plague and other contagious diseases.

EFT, in zoology, *Lacerta vulgaris*, the common lizard, called also, in several parts of the kingdom, the newt, or evet.

EEFU'SION, in surgery, the escape of any fluid out of the vessel, or viscus naturally containing it; also the natural secretion of fluids.

EGG, a body formed in the females of fowls, &c., containing an embryo, or germ of the same species, under a cortical surface or shell; which shell becomes more brittle by being exposed to a dry heat. It is lined everywhere with a very thin membrane, which dividing at, or very near, the obtuse end of the egg, forms a small bag where only air is contained. In new-laid eggs, this follicus appears very little, but becomes larger when the egg is kept. Within this are contained the *albumen*, or white, and the *vitellus*, or yolk. The animal in the egg is first nourished by the albumen; and when this is consumed, by the vitellus, as with milk.—Most insects are oviparous.—The eggs of fish and some other animals are united by a viscous substance, and called spawn.——The quantity of eggs consumed in England appears almost incredible. Independently of the home produce, which is immense, the number of eggs annually imported from France, and other parts of the continent, is upon an average about 65 millions.

EGG'-PLANT, in botany, the *Solanum melongena* of Linnæus, so called because the fruit is like an egg.

EG'LANTINE, in botany, the *Rosa rubiginosa*, or sweet briar.

E'GRET, in ornithology, a bird of the heron kind, of which there are two, the *great* and the *little* egret.

EI'DER-DOWN, the soft feathers of the *eider-duck*, which are much esteemed.——*Eider-ducks* build their nests among precipitous rocks, and the female lines them with fine feathers plucked from her breast. This being collected, forms the *eider-down*.

EJECT'MENT, in law, a writ or action which lies for the recovery of possession of land from which the owner has been ejected, and for trial of title. Ejectment may be brought by the lessor against the lessee for rent in arrear, or for holding over his term; also by the lessee for years, who has been ejected before the expiration of his term.

EKEBERG'ITE, a mineral supposed to be a variety of *scapolite*.

ELAB'ORATE, an epithet expressive of great care, diligence, &c., used in the execution of any performance.

ELÆAG'NUS, or Dutch-myrtle, in botany, a genus of trees, belonging to the *tetrandria-monogynia* class, the characters of which are, that it has no flower-petals, and the fruit is an oval, obtuse, and smooth drupe, including an oblong kernel or nut.

ELÆOCAR'PUS, in botany, a genus of the *polyandria monogynia* class of trees, the calyx of which is a five-leaved perianthium; the corolla consists of five jagged torn petals, of the length of the cup; the fruit is a roundish drupe; and the seed a crisp spherical nucleus.

ELÆOM'ELI, a gum which drops from the olive-trees in Syria. It is thicker than honey, and of an oily nature.

ELA'OLITE, called also *fellstein*, a mineral more or less translucent, of a greasy appearance, having a crystaline structure, and varying in its colour from greenish blue to flesh red.

ELASTI''CITY, or ELASTIC FORCE, that inherent property of bodies by which they restore themselves to their former figure, after any external pressure or tension, very observable in a bent bow, steel springs, and the like. A *perfectly elastic* body, is that which restores itself with the same force wherewith it was bent, or depressed; those which do not restore themselves with exactly the same force, being called *imperfectly elastic* bodies. The air is *elastic;* vapours are elastic; and when the force compressing them is removed, they instantly expand or dilate, and recover their former state. Elasticity, indeed, seems to vary, according to the different densities of bodies; for the more metals are hammered, the more elastic they become.

ELA'TER, in entomology, a genus of four winged flies of the order *coleoptera*, the body of which is oblong, and the antennæ setaceous; and when the insect is laid on its back, it leaps with great agility.

ELATE'RIUM, a substance deposited from the very acrid juice of the *Momordica elaterium*, or wild cucumber. It is in thin cakes, of a greenish colour and bitter taste, and is a powerful cathartic.

EL'ATIN, the active principle of the elaterium, from which the latter is supposed to derive its cathartic power.

ELBOW, in anatomy, the juncture of the *cubitus* and *radius;* or the outer angle made by the flexure or bend of the arm.——*Elbow*, in architecture, a term used for an obtuse angle of a wall, building, road, &c., which divides it from its right line.

EL'DER, a person advanced in life, and who, on account of his age and experience, is selected to fill some important office. In Jewish history, the *elders* were persons the most considerable for age, experience, and wisdom. Of this sort were the seventy men whom Moses associated to himself in the government of his people: such also were those who afterwards held the first rank in the synagogue, as presidents. In the first Christian churches, *elders* were persons who enjoyed offices or ecclesiastical functions, and the word includes apostles, pastors, presbyters, bishops, or overseers: hence the first councils of the Christians were called *presbyteria*, or councils of *elders*. In the modern presbyterian churches, *elders* are officers

THE EGGS OF BIRDS WHICH NESTLE IN HOLES, AS WOODPECKERS, ROBINS, SWALLOWS, &c. ARE OF A SHINING WHITE COLOUR.

THE EGGS OF STARLINGS, FLY-CATCHERS, HEDGE-SPARROWS, &c. ARE CHARACTERIZED BY A PALE GREEN OR PALE BLUE COLOUR.

ELECTRIC CHANGES SENT THROUGH A CHAIN OR WIRE SHORTEN IT, AND INCREASE ITS THICKNESS BY LATENT EXPANSION.

who with the ministers and deacons, compose the sessions of the kirk, and have authority to inspect and regulate matters of religion and discipline.

EL'DER, a tree or genus of trees, the *Sambucus*, of several species. Some bear black, some white, and others red berries. The stem and branches contain a soft pith.

ELEAT'IC, an epithet given to a certain sect of philosophers, so called from Elea, a town of the Lucani, where most of its celebrated teachers were born.

ELECAMPA'NE, in botany, the *Inula*, a genus of plants, of many species. The common elecampane has a perennial, thick, branching root, which is used in medicine as a sudorific and expectorant.

ELECT', in theology, among Calvinists, a term for those whom they believe God has chosen, or predestinated to be saved. ——*Elect*, in matters of polity, signifies chosen, but not inaugurated. Thus the lord mayor of London, before his predecessor's mayoralty is expired, is called the lord mayor *elect*.

ELECTION, the act of choosing a person to fill an office or employment, by any manifestation of preference; and is applicable to the choice of members of the legislature, which takes place within every seven years; to the choice of parish officers, annually; and to the admission of members into societies. Sometimes it is practised by show of hands; sometimes by ballot, and at others, by every elector giving his vote separately, with an oath in regard to his right and integrity.——*Election* is also the state of a person who is left to his own free will, to take or do one thing or another, which he pleases.——*Election*, in theology, divine choice, by which persons, according to the calvinistic creed, are distinguished as objects for salvation by the special grace of God, without reference to their good or bad deeds.

ELECT'IVE, dependent on choice, as an *elective* monarchy: opposed to hereditary.

ELECTORATE, the dignity or territory of an elector in the German empire.

ELECT'OR, in law, any one who has the right of giving his vote at an election, particularly at an election of a member of parliament.——*Elector*, in political history, the title of such German princes as formerly had a voice in the election of the emperor of Germany.

ELECT'RIC, a term for any substance capable of exhibiting the phenomena of electricity, either by friction or otherwise, and of resisting the passage of it from one body to another. Hence an *electric* is called a non-conductor.——*Electric Fluid*, a fine rare fluid, supposed to issue from and surround electrical bodies.

ELECTRI''CITY, the operation of an extremely subtile fluid, in general invisible; but which appears to be diffused through most bodies; is remarkable for the rapidity of its motion, and discovers itself to be one of the principal agents in nature. The name is derived from *electrum*, (amber,) a substance the attractive power of which was observed at least six hundred years before the Christian era: electricity, however, scarcely became a distinct object in science before the commencement of the seventeenth century, when a book, containing accounts of several electrical experiments, was written by Dr. William Gilbert; and it is only since the year 1745, when the *Leyden phial* was discovered, that it has advanced with any considerable rapidity. From that time, however, electricity became the general subject of conversation, and, as a science, it advanced with great rapidity under the auspices of Franklin, Priestley, and others. The earth, and all bodies with which we are acquainted, are supposed to contain a certain quantity of an exceedingly elastic invisible fluid, called the electric fluid. This certain quantity belonging to all bodies may be called their natural share; and which of itself, in its dormant state, produces no sensible effect; but as soon as the equilibrium is disturbed, and the surface of any substance becomes possessed of more than its natural share, it exhibits the phenomena of attraction and repulsion, and other remarkable effects are produced according to the quantity of excitation.—Bodies capable of accumulating and retaining the electric fluid are impervious to its power, and in proportion as they are capable of being excited, so are they less pervious; while, on the other hand, those which are more pervious are less capable of excitation. They are called *electrics*, or *non-conductors*, in distinction from those which are capable of receiving and transmitting electricity, and on that account called conductors. To the class of electrics belong resins, bitumens, glass, dry animal substances, feathers, paper, white sugar, oils, chocolate, &c. Substances of this description may be excited by friction, so as to exhibit the electric appearances of attracting and repelling light bodies, and emitting sparks or flashes of light, attended with a sharp snapping sound; and such is the rapidity of the electric fluid in motion, that no perceptible space of time is required for its passage to any known distance. It is now thoroughly ascertained that lightning is the rapid motion of vast masses of the electric matter, and thunder is the noise produced by the motion of lightning. Metallic points silently attract electricity from the bodies charged with it; hence the use of pointed conductors to secure buildings from the effects of lightning. The *aurora borealis*, or northern lights, are (as we have observed) the effects of the electric fluid passing through highly rarefied air. It is also well known, that earthquakes, whirlwinds, and water-spouts are generally accompanied with, and dependent upon electrical phenomena.——Among the numerous philosophic enquirers on this interesting subject, the nature of which is daily further illustrated by the experiments of scientific men, none have given it more attention, or have more systematically developed its causes and effects, than Professor

THE EFFECTS OF ELECTRICITY IN THUNDER-STORMS WERE FIRST EXPERIMENTALLY DEMONSTRATED BY DR. BENJAMIN FRANKLIN.

Faraday, whose series of experiments, which were read before the Royal Society during the last year, are an honourable example of persevering industry in the cause of science. It is not within the scope of this work to enter at large into this or any other science; but we are desirous, when we cannot do more, to direct attention to the best sources of information, and to render honour where honour is due. We will therefore now dismiss the article, by referring to the Proceedings of the Royal Society, and the Scientific and Literary Periodicals generally, for further details. But there is something so singular in the following account of an "electrical lady," authenticated by a respectable physician who communicated it to the editor of "Silliman's Journal," in which it recently appeared, that we insert it as a curiosity. He states, "that on the evening of Jan. 28th, during a somewhat extraordinary display of northern lights, the person in question became so highly charged with electricity, as to give out vivid electrical sparks from the end of each finger to the face of each of the company present. This did not cease with the heavenly phenomenon, but continued for several months, during which time she was constantly charged, and giving off electrical sparks to every conductor she approached; so that she could not touch the stove, nor any metallic utensils, without first giving off an electrical spark, with the consequent twinge. The state most favourable to this phenomenon was an atmosphere of about 80 deg. Fahrenheit, moderate exercise, and social enjoyment. It disappeared in any atmosphere approaching zero, and under the debilitating effects of fear. When seated by the stove, reading, with her feet upon the fender, she gave out sparks at the rate of three or four a minute; and under the most favourable circumstances, a spark that could be seen, heard, or felt, passed every second! She could charge others in the same way, when insulated, who could then give sparks to others. To make it satisfactory that her dress did not produce it, it was changed to cotton and woollen, without altering the phenomenon. The lady is about thirty, of sedentary pursuits, and delicate state of health."

ELECTRI"CIAN, a person versed in electricity, and who has scientifically investigated its properties by observation and experiments.

ELECTRICAL MACHINE, an instrument or apparatus contrived for rubbing electrics and conductors together, and for collecting the electric fluid from surrounding bodies. There are various kinds; but the cylindrical machine is in most common use. This consists of a glass cylinder, fixed in such a manner that it may be turned with a winch; a cushion, supported by a glass pillar, and having a piece of silk which comes between it and the cylinder; and a tube, supported by a glass pillar, which is called the prime conductor, or simply the conductor.——*Electrical rubber*, a part of the electrical apparatus, consisting of black oiled silk, which serves to aid the friction in the electrical machine.——*Electrical shock*, the sudden explosion between the opposite sides of a charged electric.

ELECTRICAL-EEL, in ichthyology, the *Gymnotus electricus* of Linnæus, a fish so called from its power of producing an electrical shock whenever it is touched. By this power it stupifies, and then seizes, such animals as venture to approach it.——The properties and habits of the electrical eel have lately more particularly come under the notice of scientific men, from the circumstance of one having been brought to this country from the Amazon river, and exhibited at the Gallery of Practical Science, London. "On October 22," says the *Athenæum*, "Professor Faraday, in the presence of Professors Daniell, Owen, Wheatstone, and others, succeeded in obtaining from it the electric spark; and one of the party, who had the temerity to grasp the creature with both hands, had his curiosity satisfied with a shock, which, if he were before incredulous, must have most effectually removed all doubts as to the electric properties of the animal. The electricity appears to be of the most intense character, being communicated by simply immersing the hands in the vessel of water containing the eel. By one shock, not only was the needle of a galvanometer deflected, but chemical action and magnetic induction obtained."—This specimen of the *Gymnotus electricus* having been entrusted to the care of Mr. T. Bradley, he has favoured the public with an interesting account of its habits, through the medium of the *Magazine of Natural History*, from which we learn, that when the eel is eager for food, it swallows it without giving it a shock; yet there is reason to believe that at the moment of seizing a fish, the eel discharges its electricity through the water, since a shock has been perceived by a person at that moment having his hands immersed in the tub in which the eel is kept. If the *Gymnotus* do not see the small fish, he appears to be aware of its presence, and seeks it; and during the motions of the two animals, if the fish happen to touch the eel, it generally receives a shock that paralyzes it, causing the victim to float, belly upwards, on the surface, till it is noticed by the eel, who instantly swallows it. According to the opinion of Dr. Faraday, who has carefully examined the animal, its electric power is identical with common electricity, though more readily developed. And it has been further remarked, that whilst the hinder parts were negatively electrified, the head and neck were positively so; and a series of electric sparks, as well as an elevation of temperature, were elicited.

ELECTRO-CHEMISTRY, that science which treats of the agency of electricity and galvanism in effecting chemical changes.——A powerful electro-chemical battery has been executed by Mr. E. M. Clarke, at the Gallery of Science, Lowther Arcade,

THE CHARACTERISTIC OF TRUE ELEGY IS A CALM AND MEDITATIVE CONTEMPLATION OF GRIEF, NOT THE AGONY OF SUFFERING.

London, by which the most surprising effects are produced. It rapidly fuses a copper rod, of a quarter of an inch in diameter; yet, notwithstanding such intense power, the experimenter holds the conducting wires in each hand, evidently without receiving any shocks from the battery.

ELECTRO MAG'NETISM, that branch of electric science which shews the agency of electricity and galvanism in communicating to certain substances magnetic properties. Thus we speak of *electro-magnetic* phenomena in the atmosphere, &c.

ELECTROM'ETER, an instrument for measuring the quantity or intensity of electricity, and determining its quality.

ELECTRO-MO'TION, the motion or passing of electricity from one metal to another, by the attraction of one metal plate in contact with another. That which produces electro-motion is called the *electro-motive power.*

ELEC'TROMOTOR, an apparatus so called by Volta; a mover of the electric fluid.

ELECTRO-NEG'ATIVE, repelled by bodies negatively electrified, and attracted by those positively electrified.——Electro-*positive*, attracted by bodies negatively electrified, or by the negative pole of the galvanic arrangement.

ELEC'TROPHOR, or ELECTROPH'ORUS, a kind of substitute for an electrical machine, consisting of two plates, one of which is a resinous electric and the other metallic.

ELEC'TROTYPE, [See VOLTAIC ENGRAVING, for a minute account of the processes employed in this new and interesting branch of science.]

ELEC'TRUM, in mineralogy, an argentiferous gold ore, of a pale brass yellow colour.——Also *Amber*, [which see.]

ELEC'TUARY, in pharmacy, a form of medicine composed of powders, or other ingredients, incorporated with some conserve, syrup, &c.

ELEEMOS'YNARY, an epithet for whatever pertains to the use and management of charitable donations, whether intended for the relief of the poor or sick, or appropriated to education. A hospital founded by charity is an *eleemosynary* institution for the sick; a college founded by donations is also *eleemosynary*; and so is the corporation which is entrusted with the care of such institutions.

EL'EGANCE, in a general sense, is that which pleases by its symmetry, purity, or beauty; and is select, as distinguished from what is common.——In literature, *elegance of composition* consists in well chosen words and phrases, arranged in an appropriate and happy manner. It implies neatness, purity, and perspicuous arrangement; a style calculated to please a delicate taste, rather than to excite admiration or strong feeling.——In speaking, it includes propriety of diction and rich expressions with gracefulness of action.——In painting, it implies a certain manner which embellishes and heightens objects; as in Correggio, where, notwithstanding all the defects as to justness of design, there is an elegance even in the manner of the design itself, as well as in the turn of the attitudes, &c.——In architecture, *elegance* consists in the due symmetry and distribution of the parts of an edifice, or in regular proportions and arrangement.——It is also applied to various works of art or nature remarkable for their beauty of form, &c.

ELE'GIT, in law, a writ of execution, which lies for a person who has recovered debt or damages; or upon a recognizance in any court, against a defendant that is not able in his goods to satisfy his creditors.

EL'EGY, a mournful and plaintive kind of poem. The principal writers of elegiac verse among the Latins, were Propertius, Ovid, and Tibullus; the chief writers of elegy among the Greeks, were Callimachus, Parthenius, and Euphorion.

EL'EMENT, in physiology, a term used to denote the original component parts of bodies, or those into which they are ultimately resolvable. In the ancient and still popular sense of the word, the elements are understood to be four in number; namely, fire, air, earth, and water; but by the researches of modern science it is fully demonstrated that earth is a compound of many earths; air, a compound of at least two gases; water, a compound of hydrogen and oxygen; and fire, only the extrication of light and heat during combustion. Modern chemistry has, in fact, determined that an element is merely the last result of chemical analysis, or that which cannot be decomposed by any means now employed.——*Elements*, in a figurative sense, is used for the principles and foundations of any art or science, as "Euclid's Elements," &c.——*Elements*, in divinity, the bread and wine prepared for the sacrament of the Lord's Supper.

EL'EMI, a resin, of a strong aromatic odour and a hot spicy taste, which exudes from incisions made through the bark of the *Amyris elemifera*, a small tree or shrub of South America. The crystaline resin of elemi is called *elemine*, and is used in making lacquer.

ELEMEN'TARY, an epithet expressive of that which is uncompounded, or having only one principle or constituent part. It also denotes *rudimental*, or *initiatory*; as, an *elementary* treatise.

ELEN'CHUS, in logic, a sophism, or fallacious argument, which deceives the hearer under the appearance of truth.

EL'EPHANT, the largest, strongest, and most sagacious of all quadrupeds. The form of this animal is altogether awkward; the head is large, the eyes small, and the ears large and pendulous; the body is thick, and the back much arched; but the most singular part of the structure of the elephant is his trunk or proboscis, by which he conveys food and drink to his mouth. The eyes are small and the feet short, round, clumsy, and distinguishable only by the toes. The trunk is a cartilaginous and

THE EMPLOYMENT OF THE ELEPHANT HAS BEEN DISCONTINUED IN MODERN WARFARE, HIS TERROR OF FIRE-ARMS RENDERING HIM UNMANAGEABLE.

muscular tube, extending from the upper jaw, and is seven or eight feet long. It is of such strength as to be capable of breaking off large branches from trees, whilst, at the same time, it is endowed with such exquisite sensibility, that it can grasp the smallest object. The two large tusks are of a yellowish colour, and extremely hard: the bony substance of these is called *ivory*. The disposition of the elephant is gentle, and his manners social; hence they are seldom seen except in troops. In wandering from place to place, the males, who are furnished with the largest tusks, put themselves at the head, and are the first to face every danger. In Abyssinia, they are pursued by hunters on horseback, in the following manner: two men, perfectly naked, mount the same horse; the hindermost is armed with a broadsword, the lower part of which is covered with cord, and the remainder is exceedingly sharp. In this manner they pursue the elephants, and having singled out one, they irritate him to attack them, when they ride up close to him, and the armed man slips from the horse on the off side, and, whilst the elephant's attention is engaged with the horse, he divides the tendons of his foot with a single blow, and thus disables him, when he is dispatched by lances. The Hottentots in South Africa hunt and shoot them. They are oftener, however, taken alive in pitfalls, or are driven into enclosures; and when gradually brought into subjection, by caresses and kind treatment, they become the most gentle and obedient of all domestic animals. To keep an elephant in full vigour, he requires daily about a hundred pounds of rice, either raw or boiled, besides fresh herbage to cool him, and about forty gallons of water as drink. —We learn, in ancient history, that elephants were first used in war by the Greeks in the time of Alexander the Great; at least there is no mention of them before. They carried upon their backs large towers, containing from ten to thirty soldiers, who threw missive weapons from thence upon the enemy, being themselves secured within their wooden walls; while the animals did great execution, by terrifying, tearing and trampling down both horses and men.

EL'EPHANT-BEETLE, in entomology, a large species of *Scarabeus*, or beetle, found in South America. It is covered with a hard black shell; is nearly four inches long; and has a proboscis an inch and a quarter in length.

ELEPHANTI'ASIS, a species of leprosy, which derives its name from the skin being covered with incrustations like those of the elephant, and the legs swelling to an immense size. It is a direful chronic disease, and regarded as contagious.

ELEPHAN'TINE, in Roman antiquity, an appellation given to the books wherein were registered the transactions of the senate and magistrates of Rome, of the emperors or generals of armies, and even of the provincial magistrates, the births and classes of the people, and other things relating to the census. They were so called, perhaps, as being made of ivory.

ELEVATION, in its primary sense, denotes exaltation; the act of raising from a lower place to a higher; or, figuratively, the act of exalting in rank; as, the *elevation* of a man to a throne.——In architecture, an orthographic or upright draught of a building.——*Elevation*, in astronomy, altitude; the height of the equator, pole, or stars, &c., above the horizon.—In gunnery, the angle which the chace of a cannon or mortar makes with the plane of the horizon.——*Elevation of the Host*, in the Romish church, that part of the ceremony of the mass which consists in the priest's raising the host above his head for the people to adore.

EL'EVATOR, in anatomy, the name of several muscles, which serve to raise the parts of the body to which they belong; as the elevator of the external ear, the epiglottis, &c.

EL'EVATORY, in surgery, an instrument used in trepanning, for raising depressed or fractured parts of the skull.

ELEUSIN'IA, in Grecian antiquity, a solemn and mysterious festival in honour of Ceres, kept every fourth year by the Celeans and Philiasians, and every fifth year by the Athenians, Lacedemonians, Parrhasians and Cretans, at Eleusis, a borough of Attica. It was transferred from thence to Rome by the Emperor Adrian. The *Eleusinia* was the most celebrated and mysterious solemnity of any in Greece, and often called by way of eminence *mysteria*. The mysteries were of two kinds, the greater and the less; the less were preparatory to the greater. They consisted of a solemn representation of what was supposed to pass in the regions of Elysium and Tartarus; and their chief design was, by sensible means, to spread among the people a conviction of the immortality of the soul, and of a future state of rewards and punishments. To reveal the secrets of the Eleusinian mysteries was looked upon as a crime that would not fail to draw down the vengeance of heaven. The person who presided at these rites was called Hierophantes, or the revealer of holy truths.

ELEUTHE'RIA, in Grecian antiquity, a festival celebrated at Platæa, in memory of the defeat of Mardonius, the general of Xerxes; and in honour of those who gallantly sacrificed their lives for the liberty of their country. It was held every fifth year, when prizes were contended for.

ELF, a term now almost obsolete, but formerly used to denote a fairy, or hobgoblin; an imaginary being, the creature of ignorance, superstition, and craft.

ELF'-ARROWS, a name given to flints in the shape of arrow-heads, vulgarly supposed to be shot by fairies. They are frequently met with in Great Britain, and there is reason to believe they were weapons of offence among the ancient Britons.

EL'GIN MAR'BLES, a collection of splendid basso-relievos and fragments of

statuary, which were brought from the Parthenon of Athens to England, in 1814, by Lord Elgin, (hence the name). They are now in the British Museum, having been purchased by government for 35,000*l*. They are unquestionably some of the finest remains of ancient art, and offer the richest field for study.

ELIMINA'TION, the ejection of superfluous matter from organized bodies.

ELIQUA'TION, in metallurgy, a separation of the different parts of mixed bodies, by the different degrees of fire required to melt them.

ELI''SION, in grammar, the cutting off or suppressing a vowel at the end of a word, for the sake of sound or measure, when the next word begins with a vowel; as, *th' ensanguined field.*

ELIX'IR, in medicine, a compound tincture, extracted from two or more ingredients.

ELK, a quadruped of the cervine genus. It is the largest of the deer kind, and is found in the northern regions of Europe, Asia, and America.

ELL, a measure of different lengths in different countries; but those mostly used in England are the English and Flemish ells; the former, three feet nine inches, or one yard and a quarter; and the latter only twenty-seven inches, or three-quarters of a yard.

ELLIP'SIS, in geometry, an oval, or curve line returning into itself, and produced from the section of a cone by a plane cutting both its sides, but not parallel to the base.——In grammar, a figure of syntax, by which one or more words are omitted, which the reader may supply; as, the horse I rode, for the horse *which* I rode. ——In rhetoric, a figure of speech whereby the orator, through excessive emotion, passes over many things, which, had he been cool, ought to have been mentioned.

ELLIP'SOID, in geometry, an elliptical spheroid, being the solid generated by the revolution of an ellipse about either axis.

ELM, in botany, *Ulmus*, a forest tree of the first magnitude, the wood of which is very serviceable where it may lie continually dry or wet, in extremes. Accordingly, it is proper for water-works, mills, pumps, aqueducts, and ship-planks beneath the water lines. It is also used for naves of wheels, handles for single saws, axle-trees, and the like. The elm is common in Great Britain, and lives to a great age. About twenty species are known, all inhabiting the temperate parts of the northern hemisphere.

ELMO'S FIRE, St.; an appearance caused by fiery meteors in the atmosphere: it is often seen playing about the masts and rigging of ships.——In explanation of this curious phenomenon, we submit the following extract of a letter from W. Traill, Esq., Kirkwall, to Professor Traill, dated May 16, 1837, describing its appearance at Orkney. "On Sunday, Feb. 19, 1837, in a tremendous gale, my large boat sunk, and it was late on Tuesday night before we could get her up and drawn to the shore, after which we had to wait till three o'clock next morning till the tide ebbed from her; she was during this time attached to the shore by an iron chain, about 30 fathoms long, which did not touch the water, when, to my astonishment, I beheld a sheet of blood-red flame, extending along the shore for about 30 fathoms broad and 100 fathoms long, commencing at the chain and stretching along the shore and sea in the direction of the shore, which was E.SE., the wind being N.NW. at the time. The flame remained about ten seconds, and occurred four times in about two minutes. Whilst I was wondering not a little, the boatmen who, to the number of 25 or 30, were sheltering themselves from the weather, came running down apparently alarmed, and asked me if I had ever seen any thing like this before. I was about to reply, when I observed their eyes directed upwards, and found they were attracted by a most splendid appearance at the boat. The whole mast was illuminated, and from the iron spike at the summit, a flame of one foot long was pointed to the N.NW., from which a thunder-cloud was rapidly coming. The cloud approached, which was accompanied by thunder and hail; the flame increased, and followed the course of the cloud till it was immediately above, when it arrived at the length of nearly three feet, after which it rapidly diminished, still pointing to the cloud, as it was borne rapidly on to S.SE. The whole lasted about four minutes, and had a most splendid appearance."

ELOCU'TION, in rhetoric, consists of elegance, composition, and dignity: the first comprehends the purity and perspicuity of a language, and is the foundation of elocution; the second ranges the words in proper order; and the last adds the ornaments of tropes and figures, to give strength and dignity to the whole. To which may be added, that there should be a certain musical cadence or intonation, to render it pleasing to the ear.

ELONGA'TION, in astronomy, the removal of a planet to the farthest distance it can be from the sun, as it appears to an observer on the earth. The term is chiefly used in speaking of Venus and Mercury, the arch of a great circle intercepted between either of these planets and the sun, being called the elongation of that planet from the sun.——*Elongation*, in surgery, an imperfect luxation, occasioned by the extension of the ligaments of a joint beyond its natural dimensions.

ELO'PEMENT, in law, the voluntary departure of a wife from her husband to go and live with an adulterer. In common acceptation, the secret departure of any female with her lover, either to be married or to live together illicitly.

E'LOPS, in ichthyology, a genus of fishes of the *Abdominal* order, having a smooth head, and a palate rough with teeth.

ELO'QUENCE, the art or act of speak-

IF SAILORS OBSERVE TWO FLAMES IN ST. ELMO'S FIRE, THEY CONSIDER IT A GOOD OMEN; IF ONLY ONE, THEY REGARD IT AS BAD. IF ONLY ONE, AND THAT REGARD IT AS BAD.

THE AMERICAN OR WHITE ELM FREQUENTLY REACHES THE HEIGHT OF 100 FEET, WITH A TRUNK FOUR OR FIVE FEET IN DIAMETER.

ing with grace, effect, and fluency, in which is comprehended a good elocution or utterance; correct, appropriate, and rich expressions, with animation, and suitable action. Cicero defines it, the art of speaking with copiousness and embellishment. Eloquence and rhetoric differ from each other, as the theory from the practice: rhetoric being the art which describes the rules of eloquence, and eloquence that art which uses them to advantage.

E'LUL, the name of a Jewish month, answering to part of August.

ELUTRIA'TION, in metallurgy, the operation of pulverising a solid substance, mixing it with water, and pouring off the liquid, while the foul or extraneous substances are floating, or after the coarser particles have subsided, and while the finer parts are suspended in the liquor.

E'LYMUS, in botany, a genus of the *Triandria digynia* class of plants, the calyx of which is a common involucrum, consisting of four leaves, and containing several flowers in two spiculæ: the particular corollæ are composed of two valves: the seed is oblong.

ELYS'IUM, or ELYS'IAN FIELDS, in heathen mythology, the supposed residence of the blessed after death. The poets describe this region as consisting of beautiful meadows alternated with pleasant groves; where a serene and cloudless sky was spread over them, and a soft, celestial light shed a magical brilliancy over every object. The heroes there renewed their favourite sports; danced to the sound of the lyre from which Orpheus drew the most enchanting tones, or wandered through the most odoriferous groves, where the warbling birds carolled forth their harmony by the side of refreshing fountains. There the earth teemed with plenteous fruits, and the verdure of spring was perpetual; while all cares, pains, and infirmities, were exchanged for the purest bliss.

ELY'TRA, in entomology, a name for the wing-sheaths, or upper crustaceous membranes, which cover the wings of the insects of the beetle tribe.

EMANA'TION, the act of flowing or proceeding from some source or origin; or, the thing that proceeds from that action. Light is an *emanation* from the sun, wisdom, an *emanation* from God, &c.

EMANCIPA'TION, in the Roman law, the setting free a son from the subjection of his father. It differed from manumission, as the latter was the act of a master in favour of a slave, whereas emancipation put the son in a situation to manage his own affairs, and to marry without his father's consent, although a minor. The word *emancipation* was applied to the projects long entertained of redeeming the negroes from Christian slavery; and to the Catholic relief bill in England.

EMAR'GINATED, among botanists, an epithet for such leaves as have a little indenting on their summits; and accordingly as this indentation is terminated on each side, they are said to be *obtusely* or *acutely* emarginated.

EMASCULA'TION, the act of depriving a male of those parts which characterize the sex. It also denotes unmanly weakness.

EMBALM'ING, the opening a dead body, taking out the intestines, and filling the place with odoriferous and desiccative drugs and spices, to prevent its putrefaction. The Egyptians have always been celebrated for their adherence to this practice, and the skill with which they performed it. With some variation, it is still one of the peculiar customs of that nation. It appears to have been a metaphysical notion, inculcated as of their religion, that the soul continued with the body. There naturally followed an affectionate desire to do every thing that living creatures can suppose acceptable to the dead. They were even desirous of having the dead bodies of their parents in their houses, and at their tables, and believed, as has been suggested, that their souls were present also; and it was essential to this gratification that those bodies should be preserved in the most perfect manner possible.——Modern chemistry has made us acquainted with many means of counteracting putrefaction, more simple and more effectual than the laborious processes of the ancients.

EMBAR'GO, in commerce, a prohibition of sailing, issued by authority on all shipping, either out of port, or into port. It is generally to restrain ships from leaving a port.

EM'BASSY, the public function or employment of a public minister, whether ambassador or envoy.

EM'BER WEEKS, four seasons in the year more particularly set apart for prayer and fasting, namely, the first week in Lent, the next after Whitsuntide, the fourteenth of September, and the thirteenth of December.——*Ember Days*, particular days of fasting and humiliation in the Ember weeks.

EM'BER-GOOSE, in ornithology, a fowl of the genus *Colymbus*, and order of *Anseres*. It is of a dusky black colour, and inhabits the Orkney isles, Iceland, &c.

EMBERI'ZA, in ornithology, a genus of birds of the order of *Passeres*. They are chiefly known in English by the name of Bunting, except the Ortolan *(Emberiza hortulana)*, which is esteemed a great delicacy for the table.

EMBEZ'ZLEMENT, the act of fraudulently appropriating a thing to one's own use, which has been intrusted to one's care and management.

EM'BLEM, a kind of painted enigma, or certain figures painted or cut metaphorically, expressing some action, or instructing us in some moral truth.

EM'BLEMENTS, in law, a word used for the produce of land sown or planted by a tenant for life or years, whose estate is determined suddenly after the land is sown or planted, and before a harvest. In this case,

the tenant's executors shall have the *emblements*. Sometimes it is used for any products that naturally arise from the ground.

EM'BOLISM, in astronomical chronology, the insertions of days, months, or years, in an account of time, to produce regularity.

EMBONPOINT, *(French)*, a moderate and agreeable fulness of figure.

EMBOSS'ING, the forming or fashioning works in relievo, whether by raising, by carving, or by depression. It is, in short, a kind of sculpture, where the figures project from the plane whereon it is cut; and according as the figures are more or less prominent, they are said to be in *alto*, *mezzo*, or *basso relievo*.——*Embossing wood*, as in picture frames and other articles of ornamented cabinet work, is either produced by means of carving, or by casting the pattern in plaster of Paris, or other composition, and cementing it on the surface of the wood. ——*Embossing cloth*. Cotton, woollen cloth, silk, paper, and other fabrics, are embossed by the powerful pressure of revolving cylinders on which the required patterns are engraved.—The patent of an ingenious invention was taken out by Mr. T. Greig of Bury, Lancashire, in 1835, for both embossing and printing silk, cotton, &c., in one or more colours at one operation.

EMBRA'SURE, in architecture, the enlargement made of the aperture of a door or window, on the inside of the wall.——In fortification, a hole or aperture in a parapet, through which cannon are pointed and discharged.

EMBROCA'TION, in pharmacy, a lotion or combination of medicinal liquids, with which any diseased part is rubbed or fomented.

EMBROID'ERY, figured work wrought on silk, cloth, stuffs, or muslins. The art of embroidery was invented in the east, probably by the Phrygians or Persians. At all events, it was introduced from Persia into Greece.——*Embroidering Machine*. Until of late embroidery work was entirely performed by hand, and was cultivated on account of its elegance, by ladies of rank; but since the invention of a most ingenious machine by M. Heilmann of Mulhause, many of them have been set up in England, France, and Germany. One of these machines having 130 needles, will perform as much as fifteen expert hand embroiderers, and requires merely the labour of one grown-up person and two assistant children.

EM'BRYO, the first rudiments of the animal in the womb, before the several members are distinctly formed, after which it is called the *fœtus*.

EMBOUCHU'RE, in music, the aperture of a flute or other wind instrument.

EMENDA'TION, an alteration made in the text of any book by verbal criticism. ——In law, the correction of abuses.

EM'ERALD, a well-known gem of a beautiful green colour, somewhat harder than quartz, which occurs in prisms with a regular hexagonal base, and ranks next in value to the oriental ruby and sapphire. It becomes electric by friction, is often transparent, sometimes only translucent, and before the blow-pipe is fusible into a whitish enamel, or glass. The most intensely coloured and valuable emeralds are brought from Peru. ——In heraldry, another name for *vert*, or the green tincture in coat armour.

EMER'GENT, in astronomy, an epithet for a star at the moment it goes out of the sun's beams, so as to become visible.——In chronology, the year or epoch from which any computation of time is made.

EMER'SION, in astronomy, the re-appearance of the sun and moon after they have undergone an eclipse; also of a star that emerges from under the rays of the sun.

EM'ERY, in mineralogy, a compact variety of *corrundum*, very generally regarded as a sort of iron ore. It is of a blackish-gray colour, and so very hard as to scratch topaz. It consists of alumina, silica, and iron; and is used in the form of a powder for polishing hard minerals and metals. The lapidaries cut ordinary gems on their wheels, by sprinkling them with the moistened powder of emery; but it will not cut the diamond.

EMET'IC, a medicine for emptying the stomach by vomiting.

EM'ETINE, in medicine, a peculiar vegetable principle, obtained from the ipecacuanha root, of whose emetic properties it is conceived to be the sole cause. In a dose of half a grain it acts as a powerful emetic, followed by sleep; and six grains produce violent vomiting, stupor and death.

EMICA'TION, a flying off in small particles, as from heated iron or fermenting liquors.

EM'IGRANT, a person removing from his native country to reside in some foreign land.

EMIGRA'TION, the removal of inhabitants from one country to another, for the purpose of permanent residence. Of late years, various causes have conspired to favour the practice of emigration from the shores of Britain to her distant colonies; and there appears to be every prospect that similar causes will exist for some length of time to come; but when we consider how much resolution is required to abandon for ever the home to which man is bound by the strongest ties of kindred and habit, to seek an uncertain fortune in a land of strangers, there is no reason to believe that large masses will ever emigrate without the most urgent motives. Prohibitions of emigration are unjust, as well as impolitic, and always prove, that a government which allows them, has an incorrect idea of its rights. British subjects, however, are encouraged rather than restrained, and our surplus population find a wide field for the exercise of their talents and their spirit of enterprise in colonies which are daily rising into importance. Still we fear that many are led to leave their native country, and dwell in a "land of promise," who have no better information respecting their future prospects, than is to be derived from the flattering and deceptive pictures presented to them by the interested agents of colonial speculators.

IN FACT IT IS THE BEST EMERALD THAT COMES FROM SCOTLAND, AND IN ENGLISH WE SAY HE IS REALLY ELOQUENT.

AN EMERALD WITHOUT A FLAW IS SO RARE, THAT IT HAS PASSED INTO A PROVERB, AND IT IS ACCORDINGLY VERY HIGHLY PRIZED.

EM'INENCE, an honorary title given to cardinals. They were called *illustrissimi* and *reverendissimi*, until the pontificate of Urban VIII.

E'MIR, a title of dignity among the Saracens and Turks. It was at first given to the caliphs, but when they assumed the titles of Sultan, that of Emir remained to their children.

EM'ISSARY, a secret agent sent to ascertain the sentiments and designs of another, and to propagate opinions favourable to his employer.

EMIT', to send forth or give out; as boiling water *emits* steam; animal bodies *emit* perspirable matter; putrescent substances *emit* noxious exhalations.

EMOLLES'CENCE, in metallurgy, that degree of softness in a fusible body which alters its shape.

EMOL'LIENTS, in medicine, such remedies as soften the asperity of the humours, and at the same time relax and supple the solids.

EMO'TION, in a philosophical sense, an internal motion or agitation of the mind which passes away without desire. When desire follows, the motion or agitation becomes a *passion*.

EM'PEROR, *(imperator)*, among the ancient Romans, a title of honour conferred on a general who had been victorious. It now denotes a sovereign prince, or supreme ruler of an empire; as, the emperor of Russia.

EMPA'LEMENT, in botany, the calyx or flower-cup of a plant.——In heraldry, a conjunction of coats of arms, pale-wise.

EM'PHASIS, in rhetoric, a particular stress of utterance, or force of the voice and action, given to such parts or words of an oration, as the speaker intends to impress specially upon his audience.

EMPHYSE'MA, in surgery, a puffy tumour, formed by the air insinuating itself between the skin and muscles, into the substance of the cellular or adipose membrane.

EM'PIRE, the territory over which a government prevails; or the government or territory of an emperor. An empire is usually a territory of greater extent than a kingdom. Thus we say, the Russian *empire;* the Austrian *empire;* the sovereigns of which are denominated *emperors*. The British dominions are also called an empire: and since the union of Ireland, the parliament is denominated the *imperial* parliament.

EM'PIS, in entomology, a genus of insects of the *Dipterous* order, having a mouth with an inflected sucker and proboscis, antennæ setaceous; and feelers short.

EM'PIRIC, one who, without a professional education or a regard to the rules of science, makes experiments with medicines. Hence the word is used for a quack or charlatan of any kind.

EMPO'RIUM, a common resort of merchants for trade; particularly, a city or town of extensive commerce, or in which the commerce of an extensive country centres, or to which sellers and buyers resort from different countries.

EMPYE'MA, in medicine, a disorder wherein purulent matter is contained in the thorax or breast, after an inflammation and suppuration of the lungs and pleura.

EMPLAS'TICS, an appellation given to medicines which constipate and shut up the pores of the body. Hence, *emplastic* means viscous, or adhesive, like a plaster.

EMPYRE'UM, or EMPYRE'AN, a term used by divines for the highest heaven, where the blessed enjoy the beatific vision.——Hence we have the word *empyreal*, as pertaining to that region of space which is refined beyond aerial substance, where only pure fire or light is supposed to exist.

EMPYREU'MA, in chemistry, the peculiar smell produced from burnt oils, in distillations of animal and vegetable substances.

EMPYREU'MATA, in medicine, the remains of a fever after the critical time of a disease.

EMUL'GENT, in a literal sense, milking or draining out. In anatomy, the *emulgent* or renal arteries are those which supply the kidneys with blood.

EMUL'SION, in medicine, any milk-like mixture prepared by uniting oil and water, by means of another substance, saccharine or mucilaginous.

EMUNC'TORY, in anatomy, a term for any part which serves to carry off the excrementitious parts of the blood and other humours; thus, the skin is the *emunctory* of the body, the nose the *emunctory* of the brain, &c.

EN'ALLAGE, a figure in grammar, where there is a change of one case or mood for another.

ENAM'EL, a kind of coloured glass, principally formed by the combination of different metallic oxydes, and used in enamelling and painting in enamel. Enamels have for their basis a pure crystal-glass, or frit, ground up with a fine calx of lead and tin prepared for the purpose, with the addition usually of white salt of tartar. These ingredients baked together, are the matter of all enamels, and the colour is varied by adding other substances, and melting or incorporating them together in a furnace. Enamels are distinguished into transparent and opaque; in the former all the elements have experienced an equal degree of liquefaction, and are thus run into crystal glass, whilst in the others, some of their elements have resisted the action of heat more, so that their particles retain sufficient aggregation to prevent the transmission of light. They are used either in counterfeiting or imitating precious stones, in painting in enamel, or by enamellers, jewellers, and goldsmiths, in gold, silver, and other metals. This art is of so great antiquity, as to render it difficult, if not impossible, to trace to its origin. It was evidently practised by the Egyptians, from the remains that have been found on the ornamented envelopes of mummies. From Egypt it passed into Greece, and afterwards into Rome and its

THE WHITE ENAMEL IN IMITATIVE GOLD TRINKETS IS MERELY GLASS RENDERED OPAQUE BY THE ADDITION OF OXYDE OF TIN.

provinces, whence it was probably introduced into Great Britain, as various Roman antiquities have been dug up in different parts of the island, particularly in the barrows, in which enamels have formed portions of the ornaments.——*Painting in enamel, &c.* is performed on plates of gold or silver, but more commonly of copper, enamelled with the white enamel: the colours are melted in the fire, where they take a brightness and lustre like that of glass. This painting is prized for its peculiar brightness and vivacity, which is very permanent; the force of its colours not being effaced or sullied by time, as in other painting, and continuing always as fresh as when it came out of the workman's hands.

ENANTE'SIS, in anatomy, a meeting or near approach of the ascending and descending vessels.

ENANTIO'SIS, a rhetorical figure, where that which is spoken negatively, is to be understood affirmatively.

ENARTHRO'SIS, in anatomy, that species of articulation which consists in the insertion of the round end of a bone in the cavity of another, forming a movable joint.

ENCÆ'NIA, in antiquity, anniversary feasts to commemorate the completing or consecrating any new and public work, &c. In modern times, this term is used for any commemorative festival.

ENCAMP'MENT, the act of pitching tents for the accommodation of an army in the open country.

ENCAUS'TIC PAINTING, a peculiar mode of painting in wax, liquefied by fire; by which the colours acquire considerable hardness, brilliance, and durability. Ancient authors often mention this species of painting, but we have no ancient pictures of this description, and therefore the precise manner formerly adopted is not completely developed, though many moderns have closely investigated the subject, and described their processes. As the thing chiefly regarded in encaustic painting was the securing of permanence and durability, by the application of fire, the word *encaustic* has been applied, in a very general sense, to other processes, in which both the material and the mode of applying the heat, are entirely different from what is conceived to have been the ancient materials and modes. The moderns have used the term for painting on porcelain, and work in enamel; and in the same way it was given to the painting on glass of the middle ages, such as is still seen in the windows of some Gothic churches. It has also been just as erroneously applied to works in metal; where gold and silver were inlaid, melted, or laid on, and of everything which was gilt or silvered by fire; which was called gold or silver encaustic.

ENCE'INTE, in fortification, the wall or rampart which surrounds a place, sometimes composed of bastions or curtains. It is sometimes only flanked by round or square towers, which is called a Roman wall.——In law, a term for a state of pregnancy.

ENCEPH'ALI, in medicine, worms generated in the head, where they cause such great pain as sometimes to occasion the loss of reason.

ENCHANT'MENT, the use of magic arts and spells, or the invocation of demons, in order to produce wonderful or supernatural effects.

ENCHA'SING, or CHA'SING, the art of enriching and beautifying gold, silver, &c., by some design represented thereon, in low relievo. It is performed by punching, or driving out the metal, to form the figure, from within side, so as to stand out prominently from the plane or surface of the metal.

ENCHYRID'ION, a manual or small volume.

ENCLAVE', in heraldry, denotes something let into another, especially when the piece, so let in, is square.

ENCLIT'IC, in grammar, a particle so closely united with any other word as to seem to be part of it, as *que*, in *virumque*.

ENCLOSING LAND, the parting off of common grounds into distinct possessions.

ENCO'RE, (French, pron. *ongkore*), a word signifying *again*; used by the audience at theatres, and other places, when they call for a repetition of a particular song, &c.

ENCROACH'MENT, in law, an unlawful intrusion or gaining upon the rights and possessions of another.

ENCYCLOPÆ'DIA, a general system of instruction or knowledge, embracing the principal facts in all branches of science and the arts, properly digested, and arranged in alphabetical order. A contemporary writer, speaking of the effects which the celebrated French *Encyclopedie* had in influencing public opinion, very truly observes, that "there is hardly an instance to be found in which the literati of a nation have obtained so extensive and powerful an influence on political sentiment as the French literati, and particularly the French encyclopædists. Their philosophy, too, was a fashionable philosophy, a philosophy for common life, favourable for wit and gaiety. Instead of proceeding with steady steps to the goal of truth, they hurried to and fro, with daring leaps, and imagined they had reached the mark, if they could maintain an opinion which contained something new and paradoxical. This mixture of philosophy with elegant literature became still more interesting on account of the opinions which men like Mably, Condillac, Mercier, Raynal, Buffon, Helvetius, Diderot, and D'Alembert, advanced on the subjects of religion and civil government, for which a prohibition was laid on the further progress of the work. But the printers only, and not the authors, were punished, and the government was soon after obliged to permit the work to proceed, as it was too weak to prevent it. To the encyclopædists, who were connected with the highest circles at that time, is justly attributed a very important influence on the French revolution." Too true indeed it is, that 'instead of proceeding with steady steps to the goal

A SKILFUL ENAMELLER WILL IMITATE THE EYES OF HUMAN BEINGS SO ACCURATELY, AS TO RENDER IT DIFFICULT TO DISTINGUISH THEM.

THE SARCASTIC VOLTAIRE OBSERVES, "THE ENGLISHMAN GAINS UPON US TWO HOURS A-DAY, BY SWALLOWING HALF OF ALL HIS WORDS."

THERE ARE A HUNDRED ENGLISHMEN WHO SPEAK FRENCH TOLERABLY WELL, FOR ONE FRENCHMAN WHO CAN SPEAK GOOD ENGLISH.

of truth,' they flattered the prejudices and called into action the worst passions of mankind, spreading a moral pestilence over the whole civilized world, which is still insinuating itself, in countless channels, through every class of society.

ENCRATI'TES, in church history, a sect which appeared towards the end of the second century: they were called *encratites*, or *continentes*, because they abstained from marriage, and the use of wine and animal food.

EN'DIVE, an herbaceous plant, a sort of succory, used as a salad: the *Chicorium endivia* of Linnæus.

ENDORS'ING, the writing one's name on the back of a bill of exchange or check: by which responsibility for its amount is incurred, if duly presented and not paid.

ENDOW'MENT, in law, the act of giving or assuring a dower to a woman. Also, the assigning certain rents and revenues for the maintenance of a vicar, almshouses, &c.—— The word endowment has also a more enlarged signification, implying any quality or faculty bestowed on man by the Creator.

EN'EMA, in medicine, a clyster.

EN'EMY, in a political sense, any one belonging to a nation with whom our own country is at war.——In law, it denotes an alien or foreigner, who in a public capacity, and with a hostile intention, invades any kingdom.

EN'ERGY, the internal or inherent power, virtue, or efficacy of a thing; as, Danger will rouse our dormant *energies* into action; the administration of the laws requires *energy* in the magistrate. It also signifies the momentum which any simple or compound body exhibits, by causes obvious or concealed.

ENERV'ATE, to deprive of nerve, force, or strength; as, idleness and luxury *enervate* both body and mind.

ENFEOFF'MENT, in law, the act of giving the fee simple of an estate.

ENFI'LED, in heraldry, an epithet implying that the head of a man, beast, or any other charge, is placed on the blade of a sword.

ENFILA'DE, in military tactics, is used in speaking of trenches, or other places, which may be seen and scoured by the enemy's shot along the whole length of a line.

ENFRAN'CHISEMENT, in law, the incorporating a person into any society or body politic; to admit to the privileges of a freeman.

ENGA'GEMENT, a word used in different senses. Any obligation by agreement or contract, is an *engagement* to perform, &c.; the conflict of armies or fleets is an *engagement*; and any occupation, or employment of the attention, is likewise called an *engagement*.

EN'GINE, in mechanics, a compound machine, consisting of one or more mechanical powers, as of levers, pulleys, &c. in order to raise, cast, or sustain any weighty body; or to perform some mechanical operation in which force and velocity are necessary. [The different kinds of engines are described in their respective places. See Steam-engine, &c.]

ENGINEER'. There are two kinds, military and civil. A *military engineer* is one who, by a perfect knowledge in mathematics, delineates upon paper, or marks upon the ground, forts, or other works proper for offence and defence. He should understand the art of fortification, so as to be able, not only to discover the defects of a place, but to find a remedy proper for them, as also how to attack as well as to defend. It is his business also to delineate the lines of circumvallation and contravallation, taking all the advantages of the ground; to mark out the trenches, places of arms, batteries, lodgments, &c.——*Civil engineers* are employed in delineating plans and superintending the construction of public works, as aqueducts, canals, bridges, rail-roads, &c.

EN'GISCOPE, in mechanics, an instrument or kind of microscope, for viewing small bodies more distinctly.

ENGISO'MA, in surgery, a fissure of the cranium. Also, a surgical instrument used in fractures of the cranium.

EN'GLISH, (pron. *Ing'glish*), the language spoken by the people of England, and their descendants in India, North America, and the British colonies. The ancient language of Britain is generally allowed to have been the same with that of the Gauls; this island, in all probability, having been first peopled from Gallia, as both Cæsar and Tacitus prove by many strong and conclusive arguments. Julius Cæsar, sometime before the birth of our Saviour, made a descent upon Britain, though he may be said rather to have discovered than conquered it: but, about the year 45, in the time of Claudius, Aulus Plautius was sent over with some Roman forces, by whom two kings of the Britons, Codigunus and Caractacus, were both signally defeated: whereupon a Roman colony was planted at Malden in Essex, and the southern parts of the island were reduced to the form of a Roman province. Britain was subsequently conquered as far north as the friths of Dumbarton and Edinburgh, by Agricola, in the time of Domitian; and a great number of the Britons, in the conquered part of the island retired to the western part, called Wales, where their language continued to be spoken without any foreign admixture. The greatest part of Britain being thus become a Roman province, the Roman legions, who resided in Britain for above two hundred years, undoubtedly disseminated the Latin tongue; and the people being afterwards governed by laws written in Latin, it must have necessarily followed that the language would undergo a considerable change. In fact, the British tongue continued, for some time, mixed with the provincial Latin; but at length, the declining state of the Roman empire rendered the aid of the Roman legions necessary at home, and on their abandoning the island, the Scots and Picts took the opportunity to attack and harass South Britain: upon

which, Vortigern, the king, about the year 440, called the Saxons to his assistance, who, coming over with several of their neighbouring tribes, repulsed the Scots and Picts, and were rewarded for their services with the isle of Thanet, and the whole county of Kent. Growing at length too powerful, and not being contented with their allotment, they dispossessed the inhabitants of all the country on the east side of the Severn; and thus the British language was in a great measure destroyed, and that of the Saxons introduced in lieu of it. What the Saxon tongue was long before the Conquest, viz. about the year 700, may be seen in the most ancient manuscript of that language, which is a gloss on the Evangelists, by bishop Eadfride, in which the three first articles of the Lord's prayer run thus: "Uren fader thic arth in heofnas, sic gehalgud thin noma, so symeth thin ric. Sic thin willa sue is heofnas, and in eortho, &c." In the beginning of the ninth century, the Danes invaded England, and getting a footing in the northern and eastern parts of the country, their power gradually increased, and in about two hundred years they became its sole masters. By this means the ancient English obtained a tincture of the Danish language: but their government, being of no long continuance, did not make so great an alteration in the Anglo-Saxon, as the next revolution, when the whole land, A.D. 1067, was subdued by William the Conqueror, duke of Normandy, in France: for the Normans, as a monument of their conquest, endeavoured to make their language as generally received as their commands: and thereby the English language became an entire medley. About the year 900, the Lord's prayer in the ancient Anglo-Saxon, read as follows: "Thu ure fader the eart on heofenum, si thin nama gehalgod; cume thin rice si thin willa on eorthan swa, swa on heofenum, &c." And, about the year 1160, pope Adrian, an Englishman, thus rendered it in rhyme:

"Ure fader in heaven rich,
Thy name be hayled ever lich,
Thou bring us thy michell blisse:
Als hit in heaven y-doe,
Evar in yearth beene it also, &c."

It continued to undergo various mutations, till the year 1537, when the Lord's prayer was thus printed: "O oure father which arte in heven, halowed be thy name: let thy kingdome come, thy will be fulfiled as well in erth as it is in heven; geve us this daye in dayly bred, &c." Here, it may be observed, the diction is brought almost to the present standard, the chief variations being only in the orthography. By these instances, and many others that might be given, it appears, that the Anglo-Saxon language, which the Normans in a great measure despoiled and rendered obsolete, had its beauties, was significant and emphatical, and preferable to what they substituted for it. "Great, verily," says Camden, "was the glory of our tongue, before the Norman Conquest, in this, that the old English could express, most aptly, all the conceptions of the mind in their own tongue, without borrowing from any." Of this he gives several examples. After the Conquest, it was ordained that all law proceedings should be in the Norman language; and hence the early records and reports of law cases came to be written in Norman. But neither royal authority, nor the influence of courts, could absolutely change the vernacular language. After an experiment of three hundred years, the law was repealed; and since that period, the English has been, for the most part, the official as well as the common language of the nation. Since the Norman invasion, the English has not suffered any shock from the intermixture of conquerors with the natives of England; but the language has undergone great alterations, by the disuse of a large portion of Saxon words, and the introduction of words from the Latin and Greek languages, with some French, Italian, and Spanish words. These words have, in some instances, been borrowed by authors directly from the Latin and Greek; but most of the Latin words have been received through the medium of the French and Italian. For terms in the sciences, authors have generally resorted to the Greek; and from this source, as discoveries in science demand new terms, the vocabulary of the English tongue is receiving continual augmentation. We have also a few words from the German and Swedish, mostly terms in mineralogy; and commerce has introduced new commodities of foreign growth or manufacture, with their foreign names, which now make a part of our language. It may then be stated, that the English is composed of, 1st, Saxon and Danish words of Teutonic and Gothic origin. 2nd, British or Welsh, which may be considered as of Celtic origin. 3rd, Norman, a mixture of French and Gothic. 4th, Latin. 5th, French. 6th, Greek. 7th, A few words directly from the Italian, Spanish, German, and other languages of the continent. 8th, A few foreign words, introduced by commerce, or by political or literary intercourse. Of these the Saxon words constitute our mother tongue. The Danish and Welsh also are primitive words, and may be considered as part of our vernacular language.

ENGRA'VING, the art of producing, by the aid of an instrument called a graver, representations on hard surfaces of metal or wood, which, by means of ink and a printing-press, may be transferred to paper. For this purpose copper has generally been used, and is wrought or etched with a tool, and the lines completed with aqua fortis, or nitric acid. But latterly mixed metals, not subject to the corrosion of oil in printing, or steel, have been introduced: and engravings on wood have been revived with great effect, as may be seen in the "pictorial" editions of various works recently published. The art of engraving on copper was invented in Europe in the early part of the 15th century: but the Chinese

ENGRAVING ON WOOD IS SUPPOSED TO HAVE BEEN INVENTED AT FLANDERS IN 1423, AND REVIVED BY THE CELEBRATED ALBERT DURER IN 1511.

IN THE FRENCH ARMY, UNDER NAPOLEON, THE OLDEST AND MOST DISTINGUISHED SERGEANTS ACTED AS ENSIGNS, AND BORE THE COLOURS.

seem to have been acquainted with it long before.——The art of *etching* was discovered some time after that of engraving. It consists in giving the representation of any object on a metal plate, on which a ground has been previously laid, capable of resisting the action of acids. After the plate has been covered with a proper varnish or ground, the ground is scored or scratched by a needle or similar instrument, in the places where the etchings or engravings are intended to be; the plate is then covered with diluted nitric acid which corrodes or eats the metal where it is thus laid bare. This is called *biting in:* the more distant and lighter places require the acid to be applied to them for a shorter time; and when it happens that any parts of the etching are wished darker, this can be accomplished by what is termed *re-biting.*

ENHARMON'IC, in music, an epithet applied to such species of composition as proceed on very small intervals, or smaller intervals than the diatonic and chromatic.

ENIG'MA, a dark or ambiguous saying, in which the true meaning is concealed under obscure language.

ENNEAHE'DRIA, in natural history, a genus of columnar, crystaliform, and double-pointed spars, composed of a trigonal column, terminated at each end by a trigonal pyramid.

ENNEAN'DRIA, the name of the ninth class in Linnæus's sexual system, consisting of plants which have hermaphrodite flowers, with nine stamens.

ENNEAPET'ALOUS, in botany, having nine petals or flower-leaves.

ENNEAT'ICAL DAYS, are every ninth day of a disease.——*Enneatical years,* are every ninth year of a person's life.

ENNUI, *(French),* a word expressive of lassitude, or weariness arising from the want of employment.

ENS, among metaphysicians, denotes entity, being, or existence: this the schools call *ens reale,* and *ens positivum,* to distinguish it from their *ens rationis,* which exists only in the imagination.——*Ens,* among chemists, signifies the essence or virtue of any substance.

EN'SIFORM, an epithet for that which resembles a sword, *(ensis);* as an *ensiform* leaf.

EN'SIGN, the flag or banner under which soldiers are ranged, according to the different regiments to which they belong. ——*Ensign* is also the officer that carries the colours, being the lowest commissioned officer in a company of infantry.——*Naval ensign,* is a large banner hoisted on a staff, and carried over the poop or stern of a ship.

ENSA'TÆ, the sixth Linnæan natural order of plants, containing the liliaceous plants, as the saffron, iris, &c.

ENSEM'BLE, *(French),* a term used in the fine arts to denote the general effect of a whole work, without reference to the parts. The *ensemble* of a picture, for instance, may be satisfactory to the eye of the spectator, though the several parts may not bear a critical analysis; or, in a drama, the characters may be well drawn, and yet it may be deficient in the *ensemble,* that is, as a whole.

ENTAB'LATURE, in architecture, the architrave, frieze, and cornice, at the top of a column, and which is over the capital; the horizontal continuous work which rests upon a row of columns.

ENTAIL', in law, an estate entailed, abridged and limited by certain conditions prescribed by the first donor. Estates-tail are either *general* or *special;* and are always less estates than a fee simple.—— *To entail,* is to settle the descent of lands and tenements, by gift to a man and to certain heirs specified, so that neither the donee nor any subsequent possessor can alienate or bequeath it.

ENTA'LIA, in natural history, shells or coverings for sea-worms.

EN'TE, in heraldry, an epithet signifying grafted or engrafted.

ENTERI'TIS, in medicine, inflammation of the intestines; a disorder always attended with considerable danger, and consequently requiring immediate attention.

EN'TEROCELE, in surgery, a rupture of the intestines.

ENTEROL'OGY, a treatise or discourse on the internal parts of the body.

ENTEROM'PHALOS, an umbilical or navel rupture.

ENTERTAIN'MENT, the pleasure which the mind receives from any thing interesting, and which arrests the attention. Also, the hospitable reception of, and amusement we provide for, our guests. ——In a dramatic sense, the farce or pantomime which follows a tragedy or comedy.

ENTHU'SIASM, in a religious sense, implies a transport of the mind, whereby a person vainly fancies himself inspired with some revelation from heaven, or that his actions are governed by a divine impulse. Devotion, when it does not lie under the check of reason, is apt to degenerate into enthusiasm; and when once it fancies itself under the influence of a divine impulse, it is no wonder that it should slight human ordinances, and trust to the conceits of an overweening imagination. But enthusiasm, in another sense, when under the controul of reason and experience, becomes a noble passion, that forms sublime ideas, and prompts to the ardent pursuit of laudable objects. Such is the enthusiasm of the poet, the orator, the painter, and the sculptor—such is the enthusiasm of the patriot, the hero, the philanthropist, and the truly devout Christian.

EN'THYMEME, among logicians, denotes a syllogism, perfect in the mind, but imperfect in the expression.

ENTI'ERTIE, or ENTI'RETY, in law, the whole of a thing, in distinction from a moiety: thus a bond, damages, &c., are said to be *entire,* when they cannot be apportioned.

ENTOMOLI'THUS, in mineralogy, an insect, or any part of one, changed into a fossil.

INSECTS ARE DESTITUTE OF VOICE, AND HAVE NO DISTINCT HEART; AND INCUBATION IS NOT NECESSARY FOR HATCHING THEIR EGGS.

ENTOMOL'OGY, that branch of zoology which treats of the orders, genera, species, varieties, structure, and habits, of insects. Like all other organized bodies, insects are composed of fluids and solids. In the four superior classes of animals, viz. mammalia, birds, reptiles, and fishes, the bones form the most solid part, and occupy the interior part both of the trunk and limbs. This is reversed in insects; the exterior part is the most solid, serving at the same time both for skin and bones. Whether insects be endowed with any senses different from those of the superior animals, cannot easily be ascertained. It appears evident that they possess vision, hearing, smell, and touch; and there are few things, either in the vegetable or animal kingdom, which are not consumed by some of them. The general characters by which insects are distinguished are the following:—they are furnished with several (six or more) feet; the muscles are affixed to the internal surface of the skin, which is a substance more or less strong, and sometimes very hard and horny; they do not breathe like larger animals, by lungs or gills situated in the upper part of the body; but by a sort of spiracles, distributed in a series or row on each side the whole length of the abdomen; these are supposed to communicate with a continued chain, as it were, of lungs, or something analogous to them, distributed throughout the whole length of the body; the head is furnished with a pair of what are termed antennæ, or horns, which are extremely different in different tribes, and which, by their structure, &c. form a leading character in the institution of the genera into which insects are divided. The sting, which is peculiar to insects of the bee tribe and some few others, is sometimes simple, having but one dart, and sometimes compound, having two darts. In bees and wasps the sting is retractile, that is, capable of being drawn in; but in other insects it is almost always hid in the body, or seldom thrust out. In some tribes of insects it exists in the males, in others in the females only, but seldom in both sexes.——Writers on natural history formerly included snails, worms, and the smaller animals, or animalcules, in general, among insects: these are now more properly placed among the tribe *vermes*, or worm-like animals. Insects have also been denominated bloodless animals, which modern discoveries have shown to be contrary to fact: some of them have been frequently viewed with the microscope, to exhibit in a striking manner the circulation of the blood. In *cimex lectularius*, for instance, the vibrations and contractions of the arteries may be distinctly observed.—— Most insects are oviparous; and as many of them cannot transport themselves easily, in quest of food, to places at a distance from one another, nature has furnished the perfect insects of many species with an instinct, which leads them to deposit their eggs in situations where the larvæ, as soon as hatched, may find that kind of food which is best adapted to their nature. Most of the butterflies, though they flutter about, and collect the nectareous juice of a variety of flowers, as food for themselves, always deposit their eggs on or near to those vegetables which are destined by nature to become the food of their larvæ. The eggs of insects are of two sorts; the first membranaceous, like the eggs of the tortoise and the other reptiles: the other covered with a shell, like those of the birds. Their figure varies exceedingly; some are round, some elliptical, some lenticular, some cylindrical, some pyramidal, some flat, some square; but the round and oval are the most common. The life of insects varies as to its duration. Some, as bees and spiders, are supposed to live for a considerable time; but others will not live beyond a year, a day, or some hours, in their perfect state, although they will continue for some time in their larva state.——In 1735, the system of Linnæus was published, It consisted at first of four orders, which he afterwards increased to seven, classing them according to their wings; viz. 1, *Coleoptera*, or such as have shells that cover the wings, as the beetle tribe. 2, *Hemiptera*, or half-winged insects, as the locust, grasshopper, &c. 3, *Lepidoptera*, or scaly winged insects, as the butterfly and the moth. 4, *Neuroptera*, or nerve-winged or fibre-winged insects, as the dragon fly, trout fly, &c. 5, *Hymenoptera*, or insects with four wings and a sting, as the bee, wasp, hornet, white ant, &c. 6, *Diptera*, or two-winged insects, as the gnat, common fly, musquito, &c. 7, *Aptera*, or insects without wings, as the spider, flea, lobster, &c.—Cuvier's later classification is much more extensive.——Insects afford nourishment to a great number of the superior animals; many of the fishes, reptiles, and birds, draw the principal part of their sustenance from that source; nay, some of them form part of the food of man. Besides, by consuming decayed animal and vegetable matter, which, if left to undergo the putrefactive process on the surface of the ground, might taint the atmosphere with pestilential vapours, preserve the air pure for the respiration of man and other animals. On the other hand, the injuries they inflict upon us are extensive and complicated; and the remedies which we attempt are often aggravations of the evil; because they are directed by an ignorance of the economy of nature. There are beetles which deposit their larvæ in trees, in such formidable numbers, that whole forests perish beyond the power of remedy. At one place in South Carolina, at least 90 trees in every 100, upon a tract of 2000 acres, were swept away by a small black winged bug. Wilson, the American ornithologist, speaking of the labours of the ivory-billed woodpecker, says, "Would it be believed that the larvæ of an insect, or fly, no larger than a grain of rice, should, silently, and in one season, destroy some thousand acres of pine trees, many of them two or three feet in diameter, and 150 feet

HIPPOCRATES WROTE UPON INSECTS ABOUT 500 YEARS BEFORE THE CHRISTIAN ERA. ARISTOTLE AND PLINY ALSO MADE THEM THEIR STUDY.

high? In some places the whole woods, as far as you can see around you, are dead, stripped of the bark, their wintry-looking arms and bare trunks bleaching in the sun, and tumbling in ruins before every blast." The corn-weevil, which extracts the flour from grain, leaving the husk behind, will destroy the contents of the largest storehouses in a very short period. The wire-worm and turnip-fly are dreaded by every farmer. The ravages of the locust present a frightful example of the formidable collective power of the insect race; and the white ants of tropical countries sweep away whole villages with as much certainty as a fire or an inundation.

ENTRE'METS, *(French)*, small plates, or dainties, set between the principal dishes at table.——In music, the inferior and lesser movements inserted in a composition between those of more importance.

ENTREPA'S, in horsemanship, a short broken pace, nearly resembling an amble.

ENTREPO'T, *(French)*, a warehouse or magazine for the deposit of goods.

ENTRICHO'MA, in anatomy, the outer extremity or edge of the eyelid.

EN'TROCHITE, a kind of fossil, usually about an inch long, and made up of round joints, which, when separated, are called *trochites*. They are striated from the centre to the outside, have a cavity in the middle, and seem to be composed of the same substance as the fossil shells of the echini.

EN'TRY, in law, the act of taking possession of lands.——In commerce, the act of setting down in an account-book the particulars of trade; as make an *entry* of that sale, debt, or credit. Bookkeeping is performed either by *single* or *double entry*.——*Entry*, at the custom-house, the exhibition or depositing of a ship's papers in the hands of the proper officers, and obtaining permission to land the goods.

ENU'CLEATE, to open as a nucleus; to clear from knots or lumps; hence, to explain, or clear from obscurity.

EN'ULON, in anatomy, the internal flesh of the gums, or that part of them which is within the mouth.

ENUMERA'TION, an account of several things, in which mention is made of every particular article.——*Enumeration*, in rhetoric, is that part of a peroration in which the orator recapitulates the principal points or heads of the discourse or argument.

ENURE'SIS, in medicine, an involuntary flow or incontinency of urine.

ENUR'NEY, in heraldry, an epithet for a bordure charged with wild beasts.

ENVEL'OPE, the cover that encloses a letter or note.——In fortification, a small rampart of earth, with a parapet.

ENVIRONNE', in heraldry, signifies surrounded with other things: thus, they say, a lion *environne* with so many bezants.

EN'VIRONS, the parts or places which surround another place; as the *environs* of a city or large town

EN'VOY, a person deputed by government to negotiate some affair with any foreign prince or state. There are envoys *ordinary* and *extraordinary*, as well as ambassadors; they are equally the same under the protection of the law of nations, and enjoy all the privileges of ambassadors, but, being in rank below them, they are not treated with equal ceremony. The word *envoy* is also sometimes applied to resident ministers.

EN'VY, a feeling that springs from pride or disappointed ambition, excited by the sight of another's superiority or success, accompanied with some degree of malignity, and usually with a desire to depreciate him.

EPA'GOGE, in rhetoric, a figure of speech, which consists in demonstrating and proving universal propositions by particulars.

EPANADIPLO'SIS, in rhetoric, a figure of speech which begins and ends with the same words.——In medicine, the return of a cold fit, in a semi-tertian fever, before the hot fit is ended.

EPANALEP'SIS, a figure of speech, in which the same word is repeated by way of emphasis.——In medicine, a restoration to life.

EPAN'ODOS, in rhetoric, a figure in which the same or similar words are used in two or more sentences.

EPANORTHO'SIS, in rhetoric, the act of changing weak or faint expressions, for those which are more energetic.

EPAPHÆ'RESIS, in medicine, a removal or taking away; applied particularly to repeated phlebotomy.

EPARI'TA, in mineralogy, a sort of liver-coloured argillaceous earth.

EPAR'SIS, in medicine, a tumour, more particularly of the parotid glands.

E'PHAH, or E'PHA, in Hebrew antiquity, a measure both for liquids and dry goods.

E'PACTS, in chronology, the excesses of the solar month above the lunar synodical month, and of the solar year above the lunar year of twelve synodical months. The epacts, then, are either *annual* or *menstrual*. Suppose the new moon to be on the 1st of January: since the lunar month is 29 days, 12 hours, 44 minutes, 3 seconds, and the month of January contains 31 days; the menstrual epact is 1 day, 11 hours, 15 minutes, 57 seconds. The annual epact is nearly 11 days; the Julian solar year being 365 days, 6 hours; and the Julian lunar year 354 days, 8 hours, 48 minutes, 38 seconds.

EP'ARCHY, the prefecture or territory under the jurisdiction of an *eparch* or governor.

EPAU'LE, in fortification, the shoulder of the bastion, or the angle of the face and flank; which is often called the *angle of the epaule*.

EPAU'LEMENT, in fortification, a work raised to cover sidewise, made of earth, gabions, &c. It also denotes a mass of earth, called a square orillon, raised to cover the cannon of a casemate, and faced with a wall.

EPAULETTE, or EP'AULET, an ornamental badge worn on the shoulder by military and naval officers. In the English

army, all officers now wear two epaulettes; the bullion, in those of field-officers and captains, are distinguished by being much thicker. The epaulettes of a colonel have a silver star, surmounted by a crown on the strap; those of a lieutenant-colonel have a crown, while those of a major are distinguished by a star.——In the navy, masters and commanders have one epaulette on the left shoulder; post-captains, under three years, one epaulette on the right shoulder, afterwards two epaulettes: rear-admirals have one star on the strap of the epaulette, vice-admirals two stars, and admirals three stars.

EPEN'THESIS, the insertion of a letter or syllable in the middle of a word, as, *alitum* for *alitum*.

EPHE'BIA, in antiquity, puberty, or the age of fifteen.

EPHE'DRA, in botany, a genus of plants in the Linnæan system, class 22 *Dioecia*, order 12 *Monodelphia*.

EPHE'LIS, in medicine, a broad solitary or aggregated spot, on the face, back of the hand, or breast, arising from exposure to the sun.

EPHEM'ERA, the DAY-FLY; a genus of flies belonging to the order *Neuroptera*, and so called from their living only one day and a night; they have two gibbous protuberances on the top of the head, resembling eyes; the tail is furnished with hairs, and the attennæ are short. To this genus belong a variety of species, differing from each other in the length of their lives; some living but a few hours, and others several days. From the short duration of the existence of these insects, the term *ephemeral* has been derived, which is used to signify anything short-lived or temporary. The ephemeræ live but a few hours after becoming perfect insects, appearing generally a short time before sunset, and rising and descending like gnats, in immense swarms. They emerge from the chrysalis, on the banks of a stream, and make their exit from the envelope or case. When at rest, these insects preserve the wings in a vertical position, and are so found, in a semi-torpid state, a short time previous to their death. In the larva state they are said to live a year, and in that of the chrysalis or pupa, two years.

EPHEM'ERIS, (plu. *ephemerides*), in astronomy, a table or collection of tables, showing the daily state of the heavens, or the places wherein all the planets are to be found every day at noon. It is from these tables that the eclipses, conjunctions, and aspects of the planets are calculated and determined.——In medicine, *ephemerides* are those diseases which return at particular times of the moon.

EPHIAL'TES, in medicine, incubus, or the night-mare.

EPHIDRO'SIS, in medicine, a violent and morbid perspiration.

EPH'OD, an ornament or upper garment worn by the *Jewish* priests. It was a sort of girdle, which being brought from behind the neck and over the two shoulders, and hanging down before, was put across the stomach, then carried round the waist, and used as a girdle to the tunic.

E'PHODOS, in medicine, the ducts or passages by which the excrements are evacuated.

EPH'ORI, in Grecian antiquity, magistrates established in ancient Sparta to balance the regal power. The authority of the *ephori* was very great: they were five in number, presided over shows and festivals, had the care of the public money, specially superintended the education of youth, and were the arbiters of war and peace.

E'PIALOS, in medicine, an ardent fever, in which both heat and cold are felt at the same time.

EP'IC, or *heroic poem*, a poem narrating a story, partly real and partly feigned; representing, in a sublime style, some signal and fortunate action; distinguished by a variety of great events; and intended to form the morals and affect the mind with the love of virtue. The *epic* may treat very different subjects; grave and elevated, like Dante's and Milton's poems; glowing and romantic, like Ariosto's; or cheerful and ludicrous: it affords, indeed, a wide range, from the sublimity of Paradise Lost to the wit of Hudibras. The great epic writers of antiquity are Homer and Virgil; among the moderns, Milton, Tasso, Camoens, Dante, and Ariosto; besides many English poets of our own day, whose claims to the honour are indisputable.

EPICAN'THIS, in anatomy, the angle of the eye.

EPICAR'PIUM, a topical medicine applied to the wrist.

EP'ICENE, in grammar, an epithet for the gender of such words as are common to both sexes.

EPICERAS'TICA, medicines which by mixing with acrimonious juices, temper them and render them less troublesome.

EPICHIRE'MA, in logic, a mode of reasoning, which comprehends the proof of one or both the premises of a syllogism, before the conclusion is drawn.

EPICTE'TIAN, pertaining to Epictetus, the Stoic philosopher; a man who was held in such high esteem, that it is said his study lamp was sold after his death for three thousand drachmas.

EPICHIROTO'NIA, in Grecian antiquity, the annual ceremony of revising the laws, which was instituted by Solon. They gave their votes by holding up their hands: hence the name.

EPICITHARIS'MA, in the ancient drama, the last part of the interlude, or a flourish of music after the play was over.

EPICRA'NIUM, in anatomy, the common integuments, aponeurosis, and muscular expansion which lie upon the cranium.

EPICURE'ANS, a numerous sect of philosophers in Greece and Rome: the disciples of *Epicurus*, who flourished about 300 years B.C. They maintained that sensual pleasure was man's chief felicity; that the world was formed by a concourse of atoms, and not governed by Providence; that the

EPHEMERA EXIST IN SUCH QUANTITIES IN CARNIOLA, THAT THEY ARE COLLECTED, AND USED AS MANURE FOR THE LAND.

RICHTER SAYS, "THE EPIC POET MAY FLY FROM REGION TO REGION BETWEEN HEAVEN AND HELL, BUT HE MUST DESCRIBE HIS WAY."

gods resided in the extramundane spaces, in soft, inactive ease, and eternal tranquillity; that future rewards and punishments were idle chimeras; and that the soul was extinguished with the body. They are mentioned in the xviith chapter of the Acts of the Apostles. *Epicurus* himself maintained a more manly philosophy than the generality of his followers; he held, indeed, that pleasure was the chief end of human pursuit; and this pleasure he placed in an exemption from pain, and a perfect tranquillity of body and mind; but the means which he pointed out as conducive to this end were prudence, temperance, fortitude, and justice, in the union of which perfect happiness consists. He pursued pleasure, therefore, in its most rational acceptation, and his life seems to have been stained with few vices. The precepts and practices of the *Epicureans* have, however, loaded his memory with unmerited infamy; and an Epicurean, according to the perverted meaning of his doctrine, is one who is devoted to sensual enjoyments, particularly those of the table.

EPICYCLE, in the ancient astronomy, a little circle whose centre is in the circumference of a greater circle.

EPICYCLOID, in geometry, is a curve generated by a point in one circle, which revolves about another circle, either on the concavity or convexity of its circumference, and thus differs from the common cycloid, which is generated by the revolution of a circle along a right line.

EPIDEMIA, in Grecian antiquity, festivals kept in honour of Apollo and Diana, at the stated seasons when these deities, who could not be present everywhere, were supposed to visit different places, in order to receive the vows of their adorers.

EPIDEMIC, a disease which prevails in a place or tract of country only for a temporary period, or that attacks many people at the same season. There are some epidemics which prevail every year, and which are produced by the various changes of the seasons. Thus, the spring is accompanied by inflammatory diseases; summer by complaints in the stomach and bowels; autumn by catarrhs; and winter by intermittents. An epidemic at its commencement is usually mild, and becomes more dangerous as it spreads; but as it goes off, it again generally assumes a mild form. Epidemics are not originally contagious; it is only under particular circumstances, especially if the disorder is a violent one, and many patients are crowded into a small room, so as to form a corrupt atmosphere about the sick, that contagion takes place. That which is frequently ascribed to contagion, is only the consequence of a violent shock of the nervous system at the sight of a sick person, perhaps in a loathsome state, whereby the disease, to which the body was already disposed, is more quickly developed.

EPIDENDRA, in botany, a term sometimes used for the parasitical plants, or those which grow on trees, shrubs, and other vegetables; as the misletoe, dodder, &c.

EPIDENDRIUM, a genus of perennial plants, class 20 *Gynandria*, order 1 *Diandria*.

EPIDERMIS, in anatomy, the cuticle or scarf skin; a thin membrane covering the skin of animals, or the bark of plants.

EPIDOTE, a mineral, found crystalized in rhombic prisms variously modified, both laterally and at its extremities. Its colour is usually some shade of green; and it has two varieties, the *zoizite* and *manganesian epidote*. Magnificent crystals of it, two or three inches in length, and between one and two in diameter, are found at Arendal, in Norway, and are hence called *Arendalite;* but they are not much esteemed in jewellery.

EPIGASTRIC, pertaining to the upper part of the abdomen. —— *Epigastric vessels*, the arteries and veins belonging to the *epigastric region;* the former being branches of the cœliac artery, and the latter of the iliac veins.

EPIGLOTTIS, in anatomy, one of the cartilages of the larynx, whose use is to cover the glottis when food or drink is passing into the stomach, to prevent it from entering into the larynx and obstructing the breath.

EPIGRAM, a short poem or composition in verse, treating only of one thing, and ending with some lively, ingenious, and natural thought or point. Boileau says, the finesse and subtilty of the epigram should turn upon the words, rather than the thoughts, by which means he reduces it to the nature of a pun, or equivoque. From its concise and expressive character, it is well fitted for satire; but an epigram may be didactic, satiric, comic, lyric, or elegiac.——Originally, epigrams were inscriptions on tombs, statues, temples, triumphal arches, &c.

EPILEPSY, a disease of the medullary system, which deprives the afflicted of sensation and volition, accompanied by involuntary contraction of the muscles. It was formerly called the falling sickness, because those who were attacked by it fell suddenly to the ground.

EPILOBIUM, in botany, Willow-herb, a genus of plants, class 8 *Octandria*, order 1 *Monogynia*. The species are perennials.

EPILOGUE, in the drama, a speech addressed to the audience when the play is ended. In the modern tragedy the epilogue is usually smart and lively, intended, probably, to compose the passions raised in the course of the representation; but it has been compared to a merry jig upon the organ, after a good sermon, to wipe away any impressions that might have been made by it, and send the congregation away just as they came.——In rhetoric, the conclusion of a speech, containing a recapitulation of the whole.

EPINICION, in the Greek and Latin poetry, is a poem or composition celebrating a victory. Also, a festival on account of a victory.

EPIPH'ANY, a Christian festival, observed on the sixth of January (the twelfth day after Christmas), in honour of the appearance of our Saviour to the magi, or wise men, who came to adore him, and bring him presents. The Greek fathers use the word for the appearance of Christ in the world, the sense in which St. Paul uses the word, 2 Tim. i. 10. On the evening of this day plum cakes are divided in family parties, by drawing lots for imaginary characters; an old custom continued for its good cheer and merriment.

EPIPHLE'BOS, in medicine, an epithet for one whose veins appear prominent.

EPIPHONE'MA, in rhetoric, a sententious exclamation or remark, not closely connected with the general tenor of the oration, and generally expressed with vehemence.

EPIPH'ORA, in medicine, a preternatural defluxion of the eyes; a disease in which the tears, from increased secretion, or other causes, accumulate in front of the eye, and trickle over the cheek.

EPIPHYLLOSPER'MOUS, in botany, an epithet for plants which bear their seeds on the back of the leaves, as ferns.

EPIPHY'SIS, in anatomy, a bony substance, or as it were a lesser bone, affixed to a larger or principal bone, by a cartilage. In young subjects these epiphyses are not continuous to the principal bone, but are only connected by the intermediate cartilage; hence they are called appendages to the bones.

EPIPLEX'IS, a rhetorical figure, which, by an elegant kind of upbraiding, endeavours to convince.

EPIP'LOCE, a rhetorical figure, by which one aggravation, or striking circumstance, is added to another; as, "He not only spared the rebels, but encouraged them; not only encouraged them, but rewarded them."

EPIP'LOCELE, in surgery, a rupture of the caul or omentum.

EPIPLOON', in anatomy, the omentum or caul.

EPIS'COPACY, a form of church government by diocesan bishops.

EPISCOPA'LIANS, an appellation given to those who adhere to the episcopal form of church government and discipline. Until the test act was repealed, none but episcopalians, or members of the Church of England, were qualified to fill any office, civil or military.

EP'ISODE, in poetry, a separate incident, story, or action, which a poet invents, and connects with his principal action, that his work may abound with a greater variety of events: though, in a more limited sense, all the particular incidents of which the action or narration is compounded, are called episodes. In epic poetry, there is much more room for the episode than in dramatic, where the poem is confined to a present action. The term *episode* has also been transferred to historical painting, in a sense analogous to that which it bears in poetry.

EPISPAS'MOS, in medicine, a quick inspiration of the breath.

EPISPAS'TIC, in medicine, signifies a blister; or a topical remedy applied for attracting the humours of the skin.

EPISTAX'IS, in medicine, a repeated bleeding of the nose.

EPIS'TLE, a letter, or letter-missive, communicating intelligence to a distant person. It is rarely used in familiar writings, but in those which are solemn and formal; as the epistles of St. Paul, the epistles of Cicero, Pliny, &c. The epistles of St. Paul, which are fourteen in number, make part of the canon of the New Testament; besides which there is one general epistle of St. James, two of St. Peter, three of St. John, and one of St. Jude.

EPISTOLOG'RAPHY, the art or practice of writing letters.

EPIS'TROPHE, in rhetoric, a figure of speech in which several successive sentences end with the same word or affirmation, as, "Are they Hebrews? so am I. Are they Israelites? so am I. Are they of the seed of Abraham? so am I," &c.

EP'ISTYLE, in ancient architecture, a term used by the Greeks for what we call the *architrave, viz.* a massive piece of stone or wood laid immediately over the capital of a column.

EP'ITAPH, a monumental inscription in honour or memory of a deceased person; or an inscription engraven or cut on a tomb, to mark the time of a person's decease, his name, and family; usually with some eulogium of his virtues or heroic deeds. The *Romans* inscribed their epitaphs to the *manes, diis manibus,* and frequently introduced the dead as speaking to the living. Sometimes they were full of moral sentiments, and adorned with carved work. The epitaphs of the present day are too often replete with fulsome compliments and expressions of respect which, not being deserved, were never paid in the lifetime of the deceased. The Germans have a most expressive proverb, "He lies like a tombstone, and is as impudent as a newspaper." Whatever the merits of the party might have been,—whether he illuminated the world of science by his discoveries, or advanced the interests of his country, while he adorned his own brow with victorious laurels, or whether by his benevolence he administered to the comforts of his fellow-creatures,—no long panegyric should mar the simplicity of his epitaph: it should be modest, brief, and unaffected.

EPITA'SIS, in ancient poetry, the second part or division of a dramatic poem, in which the plot, entered upon in the first part, or *protasis,* was carried on, heightened, and worked up, till it arrived at its height, called *catastasis.*——In medicine, an increase of the paroxysm of a fever.——In rhetoric, that part of an oration in which the orator addresses himself most forcibly to the passions.

EPITHALA'MIUM, a nuptial song, or poetical composition in praise of the bridegroom and bride, with wishes for their

WITH THE BEST POETS, THE EPISODE IS NOT AN UNNECESSARY APPENDAGE, BUT HELPS TO DEVELOPE THE GENERAL PLOT.

"NATURE AND NATURE'S LAW LAY HID IN NIGHT; GOD SAID 'LET NEWTON BE'—AND ALL WAS LIGHT."—POPE'S EPITAPH ON SIR I. NEWTON.

A YEAR OF 365 DAYS, WITHOUT ANY INTERCALATION, IS CALLED AN ERRATIC YEAR; A LUNAR YEAR CONSISTS OF 354 DAYS.

ALL NATIONS AT PRESENT, USING EITHER THE OLD OR NEW STYLE, COMMENCE THE YEAR WITH THE 1ST OF JANUARY.

prosperity. Among the Greeks and Romans, it was sung by young men and maids at the door of the bridal chamber.

EPI'THEM, in medicine, any external application used as a fomentation.

EPI'THET, an adjective expressing some real quality of the thing to which it is applied. We have frequent occasion for the use of the word *epithet* in this work, (in defining botanical and other scientific terms,) which those who consult our pages cannot fail to notice.

EPIT'OME, a brief summary or compendium, containing the substance or principal matters of a book.——*To epitomize*, therefore, is to shorten a literary production by judicious abridgment.

EPIT'ROPE, or EPIT'ROPY, in rhetoric, a figure of speech, by which one thing is granted, with a view to obtain an advantage; as "I concede the fact, but this very concession overthrows your own argument."

EPIZEUX'IS, in rhetoric, a figure which repeats the same word, without any other intervening: such is that of Virgil, "nunc, nunc, insurgite remis."

EPIZOOT'IC, in geology, an epithet given to such mountains as contain petrifactions of animal remains, or the impressions of animal substances.

EPIZOO'TY, a pestilence among brutes.

E'POCH, a certain fixed period, or point of time, made famous by some remarkable event, and serving as a standard in chronology and history. The principal of these are the Creation, 4004 B. C.; the Flood, 2348 B. C.; the birth of Abraham, 1996 B. C.; the conquest of Canaan, 1451 B. C.: the taking of Troy, 1184 B. C.; the finishing of Solomon's Temple, 1104 B. C.; the first Olympiad, 776 B. C.; the building of Rome, 753 B. C.; the era of Nabonassar, 747 B. C.; the founding of the Persian Empire, by Cyrus, 559 B. C.; the death of Alexander, 323 B. C. the death of Cæsar, 44 B. C.: the birth of Christ, 1, or the commencement of the Christian era; the Hegira of Mahomet, 622 A. D.——The Christian era used by almost all Christian nations, dates from January 1st, the middle of the fourth year of the 194th Olympiad, in the 753d of the building of Rome, and 4714th of the Julian period. The Christian year, in its division, follows exactly the Roman year, consisting of 365 days for three successive years, and of 366 in the fourth year, which is termed *leap* year. The simplicity of this form has brought it into very general use, and it is customary for astronomers and chronologists, in treating of ancient time, to date back in the same order from its commencement. The Christian year (or Julian year), arranged as we have shewn, was 11′ 11″ too long, amounting to a day in nearly 129 years; and, towards the end of the 16th century, the time of celebrating the church festivals had advanced ten days beyond the periods fixed by the Council of Nice, in 325. It was in consequence ordered, by a bull of Gregory XIII., that the year 1582 should consist of 355 days only, which was effected by omitting ten days in the month of October, viz. from the 5th to the 14th; and, to prevent the occurrence of a like irregularity, it was also ordered, that, in three centuries out of four, the last year should be a common year instead of a leap year, as it would have been by the Julian calendar. The year 1600 remained a leap year, but 1700, 1800, and 1900, were to be common years. This amended mode of computing was called the *new style*, and was immediately adopted in all Roman Catholic countries, while the *old style* continued to be employed by Protestants. In 1700, however, the Protestants of Germany commenced with the new style; and in 1752 it was adopted in England, by omitting eleven days, to which the difference between the styles then amounted. The Russians continued to use the old style till the year 1830, when they followed the example of the other nations of Europe.

EP'ODE, in lyric poetry, the third or last part of the ode, the ancient ode being divided into strophe, antistrophe, and epode. The word is now used for any little verse or verses, that follow one or more great ones.

EPOPEE', or EPOPŒ'IA, in poetry, the fable, or subject of an epic poem.

EPOTIDES, in the naval architecture of the ancients, two thick blocks of wood, one on each side the prow of a galley, for warding off the blows of the rostra of the enemy's vessels.

EPOPTÆ, in antiquity, a name given to those who were admitted to view the secrets of the greater mysteries, or religious ceremonies of the Greeks.

EPROUVETTE, the name of an instrument for ascertaining the strength of dried gunpowder, or of comparing the strength of different kinds of gunpowder.

EPSOM SALTS, in chemistry, sulphate of magnesia, which was formerly procured by boiling down the mineral water from the spring at Epsom, but is now prepared from sea water. Its component parts are water, sulphuric acid and magnesia, and it is used as a cathartic.

EPULO'NES, in Roman antiquity, public officers who assisted at the sacrifices, and had the care of the *epulum*, or sacred banquet, committed to them.

EPULOT'IC, in medicine, an application for cicatrizing and healing wounds or ulcers, or to dispose the parts to recover soundness.

E'QUABLE, an epithet for uniform motion, &c.; or that which is neither accelerated nor retarded.

EQUAL'ITY, a term of relation between things the same in magnitude, quantity, or quality. Also, the same degree of dignity or claims; as, the *equality* of men, in the scale of being: an *equality* of rights, &c.

EQUANIM'ITY, that even and calm frame of mind and temper, under good or bad fortune, which is not easily elated or depressed. A truly great man bears misfortunes with *equanimity*, and carries himself in prosperity without vain exultation or excessive joy.

EQUA'TION, in algebra, that disposi-

THE RAINY SEASON WITHIN THE TROPICS IS WHEN THE SUN IS IN VERTICAL SIGNS; AT OTHER TIMES THERE IS NOT A CLOUD FOR MONTHS.

THOSE STORMS WHICH TAKE PLACE ABOUT THE TIME THE SUN CROSSES THE EQUATOR, ARE CALLED EQUINOCTIAL GALES.

tion of quantities, by which one set is made equal to another; or in which two quantities, equal in value, but differently represented, are put equal to each other by means of the sign of equality; as, $3s.=36d.$, or $x=b+m-r$.——*Equation of payments*, in arithmetic, a rule for finding a time when if a sum be paid which is equal to the sum of several others due at different times, no loss will be sustained by either party.——*Equation*, in astronomy, a term used to express the quantity added to, or subtracted from, the mean position of a heavenly body to obtain the true position.——*Equation of time*, denotes the reduction of the apparent time or motion of the sun, to equable, mean, or true time. The difference between true and apparent time arises from two causes, the eccentricity of the earth's orbit, and the obliquity of the ecliptic.

EQUA'TOR, in astronomy and geography, a great circle of the terrestrial globe, equidistant from its poles, and dividing it into two equal hemispheres; one north and the other south. It is called *equator*, because when the sun is in it, the days and nights are of *equal* length; hence it is called also the *equinoctial*, and when drawn on maps and globes, it is called the *equinoctial line*, or by mariners simply *the line*. All places which are on it have invariably equal days and nights. It crosses the centre of Africa, the islands of Sumatra, Borneo, Celebes, &c., in Asia, then traverses the Pacific Ocean, and crosses South America, in Columbia, thence proceeds through the Atlantic back to Africa.——To *cross the line*, in navigation, is to pass over the equator.

E'QUERRY, an officer of state under the master of the horse. There are five equerries, who ride out with her majesty; for which purpose they give their attendance monthly, one at a time, and have a table provided for them.

E'QUES AURA'TUS, a Roman knight, so called because none but knights were allowed to gild their armour.

EQUES'TRIA, a place in the Roman theatres where the knights or *equites* sat.

EQUESTRIAN GAMES, in Roman antiquity, *(ludi equestres)*, horse-races, of which there were five kinds; the *prodromus* or plain horse-race, the chariot race, the decursory race about funeral piles, the *ludi sevirales*, and the *ludi neptunales*.——*Equestrian order*, the second rank in Rome, next to the senators.——*Equestrian statue*, the representation of a person on horseback.

EQUIAN'GULAR, in geometry, an epithet given to figures, whose angles are all equal: as a square, an equilateral triangle, a parallelogram, &c.

EQUICRU'RAL, in geometry, having equal legs, but longer than the base; as, an *equicrural triangle*.

EQUIDIF'FERENT, in mathematics, an epithet for such things as have equal differences, or are arithmetically proportional.——In crystalography, having a different number of faces presented by the prism and by each summit; and these three numbers form a series in arithmetical progression, as 6, 4, 2.

EQUILAT'ERAL, in geometry, having all the sides equal; as an *equilateral triangle*.

EQUIL'IBRIST, one who keeps his balance in unnatural positions and hazardous movements; entertaining the spectator by his skilful motions and varying attitudes. In the East they are very common, and their feats are truly surprising.

EQUILIB'RIUM, in mechanics, equipoise, or equality of weight: the state of the two ends of a lever or balance when they are charged with an equal weight, and hang exactly even and level, in a position parallel to the horizon.

EQUIMUL'TIPLE, in arithmetic and geometry, a number multiplied by the same number or quantity. Hence *equimultiples* are always in the same ratio to each other, as the simple numbers or quantities before multiplication. Thus if 2 and 3 are multiplied by 4, the multiples, 8 and 12, will be to each other as 2 and 3.

EQUINOC'TIAL, in astronomy, a great circle of the sphere, under which the equator moves in its diurnal course. It is so called, because whenever the sun comes to this circle, the days and nights are equal all over the globe; being the same with that which the sun seems to describe, at the time of the two equinoxes of spring and autumn.——*Equinoctial Points*, the two points, Aries and Libra, where the equinoctial and ecliptic cross each other.——*Equinoctial Colure*, the great circle passing through the poles of the sphere, and the equinoctial points..

E'QUINOX, in astronomy, the time when the sun enters either of the equinoctial points, where the ecliptic intersects the equinoctial. When the sun is in this situation, the horizon of every place is divided into two equal parts by the circle bounding light and darkness; hence the sun is visible everywhere twelve hours, and invisible for the same time in each 24 hours. As the sun is in one of them, in the spring, viz. March 21st, it is called the *vernal* equinox; and in the other, in autumn, viz. September 23d, it is called the *autumnal* equinox. At all other times the lengths of the day and night are unequal, and their difference is the greater the more we approach either pole, and in the same latitude it is every where the same. Under the line this inequality entirely vanishes: there, during the day, which is equal to the night, the sun always ascends six hours, and descends six hours. In the opposite hemisphere of our earth, the inequality of the days increases in proportion to the latitude: the days increase there, while the nights diminish with us, and *vice versâ*.

EQUIPAGE, the furniture of an army or body of troops, infantry or cavalry, including whatever is necessary for a military expedition.——*Camp equipage* includes tents, and everything necessary for accommodation in camp.——*Field equipage* consists of arms, artillery, waggons, tumbrils,

IT IS THE PROVINCE OF A JUDGE TO LOOK TO THE OBJECTS OF THE LEGISLATURE; HE IS NOT TO SET ASIDE THE LAW, BUT TO EXPOUND IT.

THE SCALE OF CHEMICAL EQUIVALENTS HAS GREATLY CONTRIBUTED TO FACILITATE THE STUDY AND PRACTICE OF CHEMISTRY.

&c.——When we speak of a body of troops being furnished with arms and warlike apparatus, we say they are *equipped* for service.

EQUIPOL'LENCE, in logic, an equivalence, or agreement, either as to the nature of the thing, or as to the grammatical sense of any two or more propositions; that is, when two propositions signify one and the same thing, though they express it differently.

EQUI'RIA, in antiquity, games instituted by Romulus in honour of Mars, and which consisted in horse-racing. They were celebrated on the third of the calends of March.

EQUISE'TUM, in botany, Horsetail, a genus of plants in the Linnæan system, class 24 *Cryptogamia*, order 1 *Filices*. Natural order of ferns.

EQ'UITANT, in botany, a term used in the foliation of plants, for leaves that ride as it were, over one another.

EQ'UITES, amongst the Romans, were persons of the second degree of nobility, immediately succeeding the senators in point of rank. Every *eques* or knight had a horse kept at the public charge; he received also the stipend of a horseman, to serve in the wars, and wore a ring, which was given him by the state. The *equites* composed a large body of men, and constituted the Roman cavalry; for there was always a sufficient number of them in the city, and nothing but a review was requisite to fit them for service.

EQ'UITY, in a moral sense, is the impartial distribution of justice. So, in an enlarged view, Blackstone observes, "equity, in its true and general meaning, is the soul and spirit of all law; positive law is construed, and rational law is made by it. In this, equity is synonymous with justice." In English jurisprudence, a court of equity or chancery, is a court which corrects the operation of the literal text of the law, and supplies its defects, by reasonable construction, and by rules of proceeding and deciding, which are not admissible in a court of law. Equity then, is the law of reason, exercised by the chancellor or judge, giving remedy in cases to which the courts of law are not competent. It will remove legal impediments to the fair decision of a question depending at law. It will prevent a party from improperly setting up, at a trial, some title or claim which would be inequitable. It will compel him to discover, on his own oath, facts which he knows are material to the right of the other party, but which a court of law cannot compel the party to discover. It will provide for the safety of property in dispute pending litigation. It will counteract, or control, or set aside, fraudulent judgments. It will also exercise, in many cases, *exclusive* jurisdiction; particularly in granting special relief beyond the reach of the common law. It will grant injunctions to prevent waste or irreparable injury, or to secure a settled right, or to prevent vexatious litigations, or to compel the restitution of title deeds; it will appoint receivers of property, where it is in danger of misapplication; it will prohibit a party from leaving the country in order to avoid a suit; it will decree a specific performance of contracts respecting real estates; it will, in many cases, supply the imperfect execution of instruments, and reform and alter them according to the real intention of the parties; it will grant relief in cases of lost deeds and securities; and, in all cases in which its interference is asked, its general rule is, that he who asks equity must do equity. In short, its jurisdiction is almost undefined, where the positive law is silent, but substantial justice entitles the party to relief. It is, however, deeply to be regretted, that the intricacy of our laws renders it so often necessary to seek redress in a court of equity. *Equitas sequitur legem* is an old maxim in law, but from the great increase of suits in chancery, some think it ought to be thus translated: "after a man has been at law, it is necessary that he should go to equity."

EQUITY OF REDEMPTION, in law, is the advantage allowed to one who mortgages his property, to have a reasonable time allowed him to redeem it; for although the estate, upon non-payment of the money, becomes vested in the mortgagee, yet equity considers it only a pledge for the money, and gives the party a right to redeem, which is called his *equity of redemption*.

E'QUUS, in zoology, a genus of animals comprehending those useful domestic animals, the horse, the ass, and the mule.

EQUIV'ALENTS, a term employed in chemical philosophy, to express the particular weight or quantity of any substance which is necessary to saturate any other with which it can combine. Tables of the combining quantities of all chemical agents have been drawn up and arranged to guide the chemist in experimental researches. The utility of these tables is very extensive; and they are rendered still more useful when accompanied by a logometric sliding scale, the application of which to this purpose was a happy invention of Dr. Wollaston. ——In a general sense, the word *equivalent* signifies that which is equal in value, weight, worth, &c., with something else. Thus, a debtor who is not able to pay his creditor in money, may pay him an equivalent.

EQUIV'OCAL, an epithet for whatever is ambiguous or susceptible of different constructions; as, that man's character is very *equivocal*.

EQUIVOCA'TION, the use of equivocal terms, which may be understood by the hearer in a different sense from that in which they are taken by the speaker. He who is guilty of *equivocation*, may be fairly suspected of hypocrisy.

EQ'UIVOQUE, a word or phrase susceptible of different significations.

E'RA. [See Æra, Epoch, &c.]

ERA'DIATION, emission of rays of light.

ERAD'ICATED, in heraldry, an epithet for a tree or plant torn up by the root.

ERA'SED, in heraldry, an epithet for the

head or limb of any creature violently torn from the body so as to give it a jagged appearance.

ERECT', in botany, an epithet for a stem, leaf, or flower, &c.; as *erectus caulis*, a stem standing perpendicularly from the ground; *flos erectus*, an erect flower, or one which has its aperture directed upwards, &c.——In heraldry, an epithet for any thing upright, or perpendicularly elevated, as wings *erect*, &c.

EREMIT'ICAL, (from *eremite*, a hermit) living in solitude, or in seclusion from the world.

ER'GOT, in farriery, a stub, like a piece of soft horn, situated behind and below the pastern joint.——Also, a dark-coloured shoot, sometimes an inch long, from the ears of grain, particularly of rye.

ER'ICA, in botany, a genus of plants, class 8 *Octandria*, order 1 *Monogynia*. The species consist of different kinds of *heaths*.

ERIOCEPH'ALUS, in botany, a genus of plants, class 19 *Syngenesia*, order 4 *Polygamia accessaria*. The species are shrubs.

ERIOM'ETER, an instrument for measuring the fibres of wool, silk, &c.

ERIOPH'ORUM, in botany, a genus of plants, class 3 *Triandria*, order 1 *Monogynia*. The species are perennials.

ER'MINE, in zoology, a species of *Mustela*, with narrow ears, and of the size of the weasel. In winter, the whole body of the ermine is of a pure snow white, except the tip of the tail, which is of a deep black, and some spots of a greyish yellow about the head and shoulders; in summer, the upper part of the body is of a pale tawny brown colour, but the tail is tipped with black. The fur of the ermine is in great request; it was formerly one of the insignia of royalty, and is still used by judges. This animal inhabits the northern climates of Europe, Asia, and America; and in its habits it is very similar to those of the weasel, frequenting barns and outhouses, and feeding not only on mice and rats, but destroying poultry, birds, eggs, &c.——*Ermine*, in heraldry, a fur used in coat armour, and supposed to represent the linings and doublings of mantles and robes.

EROT'IC POETRY, a term for amatory poetry. The name of *erotic* writers has been applied particularly to a class of romance writers who belong to the later periods of Greek literature, and whose works abound in sophistical subtilties and ornaments.

EROTOMANY, a term employed by some writers to denote that modification of insanity, of which the passion of love is the origin, and in which the love of a particular individual constitutes the predominant idea, occupying the whole attention of the patient. It sometimes passes into perfect delirium, leads to suicide, hysterics, &c. Young people are peculiarly subject to it, who have an excitable nervous system and lively imagination, who give themselves up to an excess in pleasure, or are spoiled by reading romances, and rendered effeminate by an injudicious education and indolence.

ERPETOL'OGY, that part of natural history which treats of reptiles.

ERRAT'IC, wandering, or having no certain course; also, not fixed or stationary; hence the planets are called *erratic stars*; and fevers which observe no regular periods, are denominated *erratic fevers*.

ERRA'TUM, an error of the press; in the plural, *Errata*, a list of which is usually printed at the beginning or end of a book.

ER'ROR, a wandering or deviation from the truth. An Error may be either *voluntary* or *involuntary*; when committed through carelessness or haste it is a *blunder*.——*Error*, in law, is a mistake committed in pleading, or in a process; whereupon a *writ of error* is brought to remedy it, which carries the suit to another tribunal for redress.

ERUBES'CENCE, a blushing; redness of the skin or surface of any thing.

ERU'CA, the White-rocket, in botany, a species of *brassica*, with lyrate leaves, hairy stalks, and smooth pods.

ERUCTA'TION, the act of belching wind from the stomach; also a violent bursting forth or ejection of wind, &c. from the earth.

ERUDI''TION, the attainment of profound learning and extensive knowledge, obtained by study and instruction; particularly learning in history, antiquity, and languages, as distinct from the useful arts and sciences.

ERU'GINOUS, partaking of the substance or nature of copper or the rust of copper.

ERUP'TION, a violent breaking or bursting forth of anything, particularly of flames and lava from a volcano. Also, a sudden or violent rushing forth of men or troops for invasion.——In medicine, a sudden and copious excretion of humours on the skin in pustules.

ERYN'GIUM, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*. The flowers are collected in a round head, similar to a thistle; the receptacle is paleaceous or chaffy; and the young shoots are esculent. One of the species of *eryngo* was formerly much employed as a tonic, but it has now gone out of use.

ERYSIP'ELAS, in medicine, an inflammatory affection, particularly of the skin, attended with fever. This disease is often called St. Anthony's fire: it is brought on by all the causes that are apt to excite inflammation, such as injuries of all kinds, the external application of stimulants, exposure to cold, and obstructed perspirations.

ERYTHRI'NA, in botany, the Coral-tree, a genus of plants, class 17 *Diadelphia*, order 4 *Decandria*; the corolla of which is papilionaceous, and consists of four petals, the fruit is a very long pod, and the seeds kidney-shaped.

ERYTHROCYA'NEUS, in ornithology, the red and blue macaw. This bird is the finest of the parrot kind; being a full yard long, from the point of the bill to the end of the tail, and its plumage adorned with the most beautiful variety of colours.

WHEN BREAD CONTAINING "ERGOT" HAS BEEN EATEN, IT HAS SOMETIMES PRODUCED GANGRENE OF THE EXTREMITIES, AND DEATH.

THE DISEASE VULGARLY KNOWN BY THE NAME OF SHINGLES (FROM THE FRENCH "CEINGLE," A BELT), IS A SPECIES OF ERYSIPELAS.

A JUSTICE OF THE PEACE IS AN ESQUIRE NO LONGER THAN HE HOLDS HIS COMMISSION, UNLESS HE IS OTHERWISE ENTITLED TO IT.

THE TITLE OF ESQUIRE WAS FIRST USED TO PERSONS OF FORTUNE, WHO WERE NOT ATTENDANTS ON KNIGHTS, ABOUT THE YEAR 1345.

ESCALA'DE, in the military art, a furious attack made upon a rampart, or scaling the walls of a fortification, by filling up the ditches with bundles of faggots, called fascines, and entering by ladders; without proceeding in form, breaking ground, or carrying on regular works to secure the men —a mode of attack much adopted in the late wars, but generally accompanied with great slaughter.

ESCAL'OP, in ichthyology, a class of bivalvular shell-fish, whose shell is regularly indented. In the centre of the top of the shell is a trigonal sinus with an elastic cartilage for its hinge.

ESCA'PE, in law, is where a person arrested gains his liberty before he is delivered by law. In *civil* cases, after the prisoner has been suffered voluntarily to escape, the sheriff can never after retake him, and must answer for the debt; but the plaintiff may retake him at any time. In the case of a negligent escape, the sheriff, upon fresh pursuit, may retake the prisoner, and the sheriff shall be excused if he have him again before any action is brought against himself for the escape. In *criminal* cases, an escape of a person arrested is an offence against public justice, and the party is punishable by fine and imprisonment.

ESCA'PEMENT, a contrivance for transmitting the power of a timepiece to the balance or pendulum, to regulate its movements.

ESCAR'GATOIRE, a nursery of snails.

ESCARP'MENT, or ESCARP', in the military art, the exterior slope facing fortified works; the interior slope being the *counterscarp*.

ES'CHAR, in surgery, the crust or scab occasioned by burns or caustic applications.

ESCHAROT'IC, in medicine, a caustic application, or one which has the power of searing or destroying the flesh.

ESCHEAT', in law, lands or profits that fall to a lord within his manor, either by forfeiture, the death of the tenant, or through failure of heirs.

ES'CORT, a guard or company of armed men attending an officer, or baggage, provisions, or munitions conveyed by land, to protect them from an enemy, &c.

ESCRO'LL, in heraldry, one of the exterior ornaments of the escutcheon, representing a slip of parchment or paper, on which the motto is generally put,

ES'CUAGE, in feudal customs, a kind of knight-service, called service of the shield, by which the tenant was bound to follow his lord to the wars at his own charge.

ESCULA'PIAN (from *Æsculapius* the physician), pertaining to the healing art.

ES'CULENT, an epithet for such plants or roots as may be eaten.

ESCU'RIAL, a celebrated palace and monastery in Spain, about twenty miles from Madrid, built by Philip II. It is in the shape of a gridiron, and contains the king's palace, St. Lawrence's church, the monastery of Jerenomites, and the free schools. It was erected in consequence of a vow made by Philip, on the day of the battle of St. Quentin, and dedicated to St. Lawrence, whose festival was on that day. Though the building is immensely large and the most superb in the kingdom, its exterior has rather the austere simplicity of a convent than the elegance of a palace. It is a quadrangle, 740 feet in length by 580 in breadth; and is said to have cost 50 millions of dollars.

ESCUTCH'EON, in heraldry, the shield on which a coat of arms is represented. It is an imitation of the ancient shields used in war.

ES'DRAS, the name of two apocryphal books, usually bound up with the Scriptures. They were always excluded the Jewish canon.

ESPOU'SALS, in law, a contract or mutual promise of marriage between a man and woman.

ESPRIT DE CORPS, a French phrase, signifying that species of attachment with which persons, more especially military men, are animated to the corps or service to which they belong.

ESOTER'IC, an epithet applied to the private instructions and doctrines of Pythagoras; opposed to *exoteric*, or public.

ESPAL'IER, a fruit tree, having the branches trained to a frame, or fastened to stakes, and spread laterally. *Espaliers* are usually planted in rows about a garden, so as to enclose quarters or separate parts.

ES'PIONAGE, a system of employing spies, or secret emissaries, either in military or political affairs.

ESPLANA'DE, in fortification, the glacis of the counterscarp, or sloping of the parapet of the covered way towards the country. The word is now also used for a sloping walk or promenade.

ESQUI'RE, anciently a shield or armour-bearer: the person that attended a knight in time of war, and carried his shield. It is now a title given to the sons of knights, or those who serve the king in any worshipful calling, as officers of the king's courts, counsellors at law, &c. It has, however, become a sort of vague and undefined compliment, placed at the end of a man's name, and may be regarded more as an expression of respect than anything else.

ES'SAY, in literature, a composition intended to prove or illustrate a particular subject, usually shorter and less methodical than a treatise.

ES'SENCE, in chemistry, denotes the purest, most subtile, and balsamic part of a body; extracted either by simple expression, or by means of fire, from fruit, flowers, &c. Of these there are a great variety, used on account of their agreeable smell and taste, by apothecaries, perfumers, and others.——In philosophy, that which constitutes the particular nature of a being or substance, and which distinguishes it from all others.

ESSE'NES, or ESSE'NIANS, in Jewish antiquity, one of the three ancient sects among that people, who outdid the Pharisees in their most rigorous observances. They allowed a future state, but denied a

THE OILS OF PLANTS ARE CALLED ESSENTIAL, BECAUSE IN THEM THE ESSENCES OR ODOURS OF THE VEGETABLES ARE CHIEFLY FOUND.

THE FLAVOUR OF LIQUORS ARISES FROM THEIR ESSENTIAL OILS, AND THEIR INTOXICATING PROPERTIES FROM ALCOHOL.

resurrection from the dead. Their way of life was very singular; they did not marry, but adopted the children of others whom they bred up in the institutions of their sect: they despised riches, and had all things in common. They are not once mentioned in the New Testament, because from their love of solitude, they were little known, and from their inoffensive way of life our Saviour had no occasion to censure them, as he frequently does the Pharisees and Sadducees.

ESSEN'TIAL OILS, in chemistry, volatile oils, having a strong aromatic smell, and which are drawn from plants by distillation in an alembic with water, in distinction from empyreumatic oils, which are raised by an open fire without water. The principal volatile or essential oils are those of turpentine, aniseed, nutmeg, lavender, cloves, carraway, peppermint, spearmint, sassafras, camomile, and citron. The taste of these oils is acrid and burning; and their odour very pungent, generally resembling the taste and smell of the vegetables affording them.——*Essential salts*, such salts as are procured from plants, and have the property of crystalizing.——*Essential properties*, in logic, such as necessarily depend upon, and are connected with, the nature and essence of a thing, in distinction from the *accidental*.

ESSOIN', in law, an excuse by reason of sickness or any other just cause for one that is summoned to appear and answer an action, &c.——The first three days of a term are called *essoin days*, as three days are allowed for the appearance of suitors.

ES'SORANT, in heraldry, a term for a bird standing on the ground with its wings expanded, as if it had been wet, and was drying itself.

ESTAB'LISHMENT, in a military sense, the quota of officers and men in an army, regiment, or company, which being much greater in war than in peace, has given rise to the distinctive terms of War Establishment and Peace Establishment. —— The word is also used when speaking of the ministers of a church established by law, as belonging to the *Establishment*.

ESTAFETTE, a military courier, sent from one part of an army to another; or a speedy messenger who travels on horseback.

ESTACA'DE, in the military art, a French word for a dyke constructed with piles in the sea, a river, or morass, to oppose the entry of troops.

ESTATE, in law, the title or interest that a person has in lands, tenements, or other effects; comprehending the whole in which a person has any property. Estates are either *real* or *personal*; otherwise distinguished into freeholds, which descend to heirs; or chattels and effects, which go to executors or administrators. There are also estates for life, for years, at will, &c. ——*Estates of the Realm* are the distinct parts of any state or government, as the king, lords, and commons, in England.

EST'HER, a canonical book of the Old Testament, containing the history of a Jewish virgin, dwelling with her uncle Mordecai at Shushan, in the reign of Ahasuerus, one of the kings of Persia. Archbishop Usher supposes Darius Hystaspes to be the Ahasuerus of Scripture, and Artystona to be Esther. Scaliger considers him as Xerxes, and his queen Hamestris as Esther. Josephus, on the contrary, asserts that Ahasuerus was Artaxerxes Longimanus; and the Septuagint, throughout the whole book of Esther, translates Ahasuerus by Artaxerxes.

ESTIMATE, a judgment or opinion formed of the value, degree, extent, or quantity of any thing, without ascertaining it. Also a computation of probable value or cost, such as is generally prepared by engineers, architects, and builders, previous to the commencement of any undertaking.

ESTIVA'TION, the act of passing the summer; and whatever pertains to summer is termed *estival*.——*Estivation*, in botany, denotes the disposition of the petals within the floral gem or bud; 1. *convolute*, when the petals are rolled together like a scroll; 2. *imbricate*, when the edges lap over; 3. *conduplicate*, when they are doubled together; 4. *valvate*, when as they are about to expand they are placed liked the glumes in grasses.

ESTO'VERS, in law, a reasonable allowance out of lands or goods for the subsistence of a man accused of felony, during his imprisonment. But it is more generally taken for certain allowances of wood made to tenants, and called, from the Saxon, *house-bote*, *hedge-bote*, *plough-bote*, &c.

ESTRAPA'DE, the motion of a restive horse, which, to get rid of his rider, rears high and kicks violently.

ESTRAY', a tame beast found without any owner known, which, if not reclaimed within a year and a day, falls to the lord of the manor.

ESTREAT', in law, a true copy or duplicate of an original writing, particularly of the penalties or fines to be levied by the bailiff or other officer, of every man for his offence.

ES'TUARY, an arm of the sea; or the mouth of a river or lake, where the tide meets the current.

ES'URINE SALTS, in chemistry, those which are of a fretting or eating quality, which abound in the air of places situated near the sea-coast, and where great quantities of coal are burnt.

ET CÆT'ERA, and the contraction *etc.* or *&c.*, denote the rest, or others of the kind; and so forth.

ETCH'ING, a method of engraving on copper or steel, in which the lines and strokes are eaten in with aquafortis. [See ENGRAVING.]

ETER'NITY, everlasting duration, without beginning or end; a term expressive of that perpetuity which can only be imagined, on account of the impossibility of conceiving when time was not, or will not be; hence many have concluded that there has been an eternity of past time, and must be an eternity of future time.

ETE'SIAN WINDS, a term applied to yearly or stated periodical winds, answering to the monsoons of the East Indies.——By *Etesian winds*, in ancient history, are meant such winds as blow at stated times of the year, from whatever part of the compass they may come.

E'THER, in chemistry, a light, volatile, and inflammable liquid, the product of the distillation of equal measures of alcohol and sulphuric acid. Its specific gravity is to water, as 632 to 1000: it boils at 98°.—— The name of ether is also given to the subtile matter or gas which fills space, and is supposed to be much finer and rarer than atmospheric air.

ETHE'REAL, containing or filled with ether; as *ethereal* space, or the *ethereal* regions.

ETH'ICS, the doctrine of manners, or science of moral philosophy, which teaches men their duty and the springs and principles of human conduct.

ETHIOP'S MINERAL, in chemistry, black sulphuret of mercury.——*Ethiop's martial*, iron in the first stage of calcination.

ETHMOID'AL, in anatomy, one of the common sutures of the skull, which goes round the *os ethmoides*, from which it derives its name, separating it from the bone in contact with it.——The *os ethmoides* is one of the most curious bones in the human body: it is exceedingly light, spongy, and consists of many convoluted plates, which form a net-work, like honey comb. It is curiously enclosed in the *os frontis*, betwixt the orbitary processes of that bone. One horizontal plate receives the olfactory nerves, which perforate that plate with such a number of small holes, that it resembles a sieve; whence the bone is named *cribriform*, or *ethmoid* bone. Other plates, dropping perpendicularly from this one, receive the divided nerves, and give them an opportunity of expanding with the organ of smelling; and these bones upon which the olfactory nerves are spread out, are so much convoluted as to extend the surface of this sense very greatly, and are named spongy bones. Another flat plate lies in the orbit of the eye; and being very smooth, by the rolling of the eye, it is named the *os planum*, or smooth bone. So that the ethmoid bone supports the fore-part of the brain, receives the olfactory nerves, forms the organ of smelling, and makes a chief part of the orbit of the eye.

ETH'NICAL, pertaining to the heathen nations, or those which were not converted to Christianity.

ETHOL'OGY, a treatise on morality or the science of ethics. Hence, one who writes on the subject of manners and morality, is termed an *ethologist*.

ETIOLA'TION, the operation of being whitened, by excluding the light of the sun: a term often used in botany.

ETIOL'OGY, an account of the causes of anything, particularly of diseases.

ETIQUET'TE, (pron. *etiket'*) rules and ceremonies of good manners observed towards particular persons, either at court or in genteel life.

ETRAPA'DE, in archæology, a crane and pulley, which was formerly used in France by way of a torture.

ETYMOL'OGY, a branch of philology, which teaches the origin and derivation of words, with a view to ascertain their radical or primary signification. In grammar, it comprehends not only the derivation of words, but their various inflections and modifications. One who is well versed in the deduction of words from their originals, is called an *etymologist*.

EU'CHARIST, the sacrament of the Lord's Supper; so called because the death of our Redeemer is thereby commemorated with thankful remembrance, and bread and wine are taken as emblems of his flesh and blood.

EUCHLO'RINE, in chemistry, protoxyde of chlorine.

EUCHOL'OGY, the ritual of the Greek church, in which are inscribed the order of ceremonies, sacraments, and ordinances.

EUCHYM'IA, or EU'CHYMY, in medicine, a good state of the blood and other fluids of the body.

EUCHYSID'ERITE, in mineralogy, a variety of augite.

EU'CLASE, a species of emerald, of a greenish white colour, and remarkably brittle.

EU'CRASY, in medicine, such a well proportioned mixture of qualities in bodies, as to constitute sound health.

EU'DIALYTE, a mineral of a brownish red colour.

EUDIOM'ETER, an instrument for ascertaining the purity of air, or the quantity of oxygen and nitrogen in atmospherical air. When a mixture of nitrous gas is to be made with atmospheric air, the most convenient apparatus consists in a glass tube closed at top, and graduated by a diamond into cubic inches and parts. The lower aperture may be widened, in order that the gases may more easily be passed up, and likewise to afford the facility of its standing alone upon the pneumatic shelf. It is likewise usual and advantageous to fit a stopper in the mouth by grinding. There are various kinds of eudiometers, by which the method of analyzing air differs; and in all of them there is at times some uncertainty. The eudiometer of Davy, more recently invented, is, however, said to be free from objection; and the apparatus is portable, simple, and convenient: Take a small glass tube, graduated into one hundred equidistant parts; fill this tube with the air to be examined, and plunge it into a bottle, or any other convenient vessel, containing a concentrated solution of green muriate or sulphate of iron, strongly impregnated with nitrous gas. All that is necessary to be done, is, to move the tube in the solution a little backwards and forwards; under these circumstances, the oxygen gas contained in the air will be rapidly absorbed, and condensed by the nitrous gas in the solution, in the form of nitrous acid. It is

SULPHURIC ETHER WAS FIRST MADE KNOWN UNDER THE NAME OF SWEET OIL OF VITRIOL, IN 1540, BY WALTERUS CODRUS.

ETHER ALTERS GRADUALLY WITH CONTACT OF AIR; ABSORBING OXYGEN, AND CHANGING INTO ACETIC ACID AND WATER.

necessary to observe, that the state of the greatest absorption should be marked, as the mixture afterwards emits a little gas which would alter the result. The air of London, examined by means of Davy's eudiometer, was found, in all the different seasons of the year, to contain 0.21 of oxygen; and the same was the case with air taken at Islington and Highgate; in the solitary cells in Coldbath-fields prison, and on the river Thames. But the quantity of water contained in a given bulk of air from these places, differed considerably.

EUDIOM'ETRY, the measurement of the quantity of oxygen contained in atmospheric air, or in any gas in which it is not intimately combined. No sooner was the composition of the atmosphere known, than it became an inquiry of importance to find out a method of ascertaining, with facility and precision, the relative quantity of oxygen gas contained in a given bulk of atmospheric air. To attain such a measurement, it is merely necessary to present to atmospheric air, some substance which combines with its oxygen, and which either does not afford any gaseous product, or affords one that is easily abstracted and measured.—[See the preceding article.]

EUHARMON'IC, in music, producing harmony or concordant sounds.

EUK'AIRITE, a mineral of a shining lead gray colour and granular structure.

EU'LOGY, a speech or writing in commendation of a person on account of his valuable qualities or beneficial services.

EU'NOMY, equal law, or a well-adjusted constitution of government.

EUPATO'RIUM, in botany, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamiæ æqualis*. The species are perennials, and consist of different kinds of agrimony.

EU'PEPSY, in medicine, good concoction in the stomach; perfect digestion.

EU'PHEMISM, in rhetoric, a figure by which things in themselves disagreeable and shocking, are expressed in terms neither offensive to good manners nor repulsive to "ears polite."

EU'PHONY, an easy and smooth enunciation of words. A grammatical licence, whereby a letter that is too harsh is converted into a smoother, contrary to the ordinary rules, for the purpose of promoting smoothness and elegance in the pronunciation.

EUPHOR'BIA, in botany, a genus of plants of many species, mostly shrubby herbaceous succulents, some of them armed with thorns. They belong to class 11 *Dodecandria*, order 3 *Trigynia*.

EUPHOR'BIUM, in medicine, a concrete gum-resin, the produce of an African perennial plant. When first chewed it has little taste, but it soon gives a very acrid burning impression to the tongue, palate, and throat, which is very permanent, and almost insupportable.

EU'RITE, or WHITESTONE, in geology, a finely granulated felspar, of very small-grained granite, with the parts so intimately blended as often to appear compact.

EU'RITHMY, in architecture, painting, and sculpture, is a certain majesty, elegance, and ease in the various parts of a body, arising from its just proportions.—In medicine, *eurithmy* signifies a good disposition of the pulse.

EUSTA'THIANS, a sect of Christians, the followers of Eustathius, an Armenian bishop in the fourth century, who, under pretence of great purity and severity, introduced many irregularities.

EU'STYLE, in architecture, a sort of building in which the columns are placed at the most convenient distances from each other, most of the intercolumniations being just two diameters and a quarter of the column.

EUTYC'HIANS, a religious sect in the fifth century, called after one Eutychus, who maintained, among other things, that the flesh of Christ differed in its nature from that of mankind.

EVAC'UANTS, in medicine, such medicines as diminish the animal fluids, by throwing out some morbid or redundant humour, or such as attenuate and promote its motion and circulation.

EVACUA'TION, in medicine, the discharge of superfluous humours or excrements out of the body, by cathartics, &c.—*Evacuation*, in military affairs, the leaving a town, fortress, or any place which has been occupied as a military post or position.

EVAN'GELIST, a general name given to those who write or preach the gospel of Jesus Christ. The word is of Greek origin, signifying one who publishes glad tidings, or is the messenger of good news. But it is applied principally to the writers of the four Gospels, or *Evangelia*, viz. Matthew, Mark, Luke, and John.—The word also denotes certain ministers in the primitive church, who assisted the Apostles in diffusing the knowledge of the gospel, and travelled about to execute such commissions as they were entrusted with, for the advancement of Christianity.

EVAPORA'TION, in natural philosophy, is the conversion of water into vapour, which, in consequence of becoming lighter than the atmosphere, is raised considerably above the surface of the earth, and afterwards, by a partial condensation, forms clouds. It differs from exhalation, which is properly a dispersion of dry particles from a body. When water is heated to 212° it boils, and is rapidly converted into steam; and the same change takes place in much lower temperatures; but in that case the evaporation is slower, and the elasticity of the steam is smaller. As a very considerable proportion of the earth's surface is covered with water, and as this water is constantly evaporating and mixing with the atmosphere in the state of vapour, a precise determination of the rate of evaporation must be of very great importance in meteorology.

EVA'SION, the act of eluding or escaping from the pressure of an argument, or from an accusation, charge, or interrogatory.

THE GREATEST EVAPORATION FROM THE EARTH'S SURFACE, IN THIS COUNTRY, TAKES PLACE IN JUNE; THE LEAST, IN JANUARY.

IN HOT, DRY WEATHER, THE EVAPORATION FROM PLANTS IS IMMENSE; IN DAMP OR WET WEATHER IT IS INCONSIDERABLE.

EVA'TES, a branch of the Druids, or ancient Celtic philosophers. Strabo divides the British and Gaulish philosophers into three sects, Bards, Evates, and Druids. He adds, that the Bards were the poets and musicians; the Evates, the priests and naturalists; and the Druids were moralists as well as naturalists.

EVECTICA, or EVECTICS, that part of physic which teaches how to acquire a good habit of body.

EVECTION *of the moon*, in astronomy, one of her most considerable irregularities, caused by the action of the sun upon her; the general effect of which is to diminish the equation of the centre at the syzygies, and to increase it in the quadrature.

E'VENING, or EVE, the precise time when evening begins is not ascertained by usage. In strictness, *evening* commences at the setting of the sun, and continues during twilight, and *night* commences with total darkness. But it sometimes includes a portion of the afternoon; as in the phrase, "the morning and evening service of the church;" and in customary language it extends to bed-time; as "I spent the evening with a friend."——Figuratively, we use it for the decline of life, or old age; as "the *evening* of life."——*Evening star*, in astronomy, Hesperus or Vesper; Venus, when visible in the evening.

EV'ERGREEN, in horticulture, a species of perennials which preserve their verdure all the year round, such as laurels, hollies, bays, pines, firs, &c.

EV'IDENCE, in its most general sense, means the proofs which establish, or have a tendency to establish, any facts or conclusions. It may be divided into three sorts, mathematical, moral, and legal. The first is employed in the demonstrations which belong to pure mathematics; the second is employed in the general affairs of life, and in those reasonings which are applied to convince the understanding in cases not admitting of strict demonstration; the third is that which is employed in judicial tribunals for the purpose of deciding upon the rights and wrongs of litigants. According to our system of jurisprudence in common law trials, it is the peculiar province of a jury to decide all matters of fact. The verdict of the jury is, however, to be given, and the trial is to be had, in the presence of a judge or judges, who preside at the trial, and are bound to decide all matters of law, arising in the course of the trial. Whenever, therefore, a question arises, whether anything offered as proof at such trial is or is not proper to go before the jury as evidence, that question is to be decided by the court, and, unless permitted by the court, it can never legally come before the consideration of the jury. Hence, whatever is so permitted to be brought before the jury, for the purpose of enabling them to decide any matter of fact in dispute between the parties, is in a legal sense, *evidence*, and is so called in contradistinction to mere argument and comment. This gives rise to a very important distinction, at the common law, as to the *competency* and the credibility of evidence. It is *competent*, when by the principles of law, it is admissible to establish any fact, or has any tendency to prove it. It is *credible*, when, being introduced, it affords satisfactory proof of the fact. It follows, therefore, that evidence may be *competent* to be produced before a jury, when it may nevertheless not amount to *credible* proof, so as to satisfy the minds of the jury; and, on the other hand, it may be such as, if before them, would satisfy their minds of the truth of the fact, but yet, by the rules of law, it is not admissible. Whether there is *any evidence* of a fact, is a question for the court; whether it is *sufficient*, is a question for the jury.

E'VIL, in philosophy, &c. is either *moral* or *natural*. Moral evil is any deviation of a moral agent from the rules of conduct prescribed to him. Some make the essence of moral evil consist in the disagreement of our manners to the divine will, whether known by reason or revelation; others, in being contrary to reason and truth; and others, in being inconsistent with the nature, faculties, affections, and situation of mankind.

EVOCA'TI, soldiers among the Romans, who having served their full time in the army, went afterwards volunteers at the request of some favourite general; on which account they were called by the honourable names of *Emeriti* and *Beneficiarii*.

EVOCA'TION, in Roman antiquity, a solemn invitation or prayer to the gods of a besieged town, to forsake it and come over to the besiegers.

EV'OLUTE, in geometry, an original curve from which another is described.

EVOLUTION, in military tactics, the complicated movement of a body of men when they change their position by countermarching, wheeling, &c.——In geometry, the unfolding or opening a curve, and making it describe an evolvent.——In algebra, the extraction of roots from powers; the reverse of involution.

EVOLVENT, in geometry, the curve described from the evolute.

EW'RY, an office in the royal household, where they take care of the table linen, &c.

EXACERBATION, in medicine, the increased violence of a disease. The term is generally restricted to the periodical increase of remittent and continued fevers, where there is no absolute cessation of the fever.

EXACTION, the act of demanding with authority, and compelling to pay or yield; as the *exaction* of tribute or obedience.

EXÆ'RESIS, in surgery, the operation of extracting or taking away something that is hurtful to the human body.

EXAGGERATION, in rhetoric, a kind of hyperbole, whereby things are augmented or amplified, by saying more than the strict truth will warrant.——In painting, a method of giving a representation of things too strong for the life.

EXALTATION, in astrology, the dignity

NO OFFICER OF EXCISE CAN VOTE FOR A MEMBER OF PARLIAMENT.

IT IS USUAL IN DRAWING FOREIGN BILLS OF EXCHANGE, TO DRAW THEM IN SETS, OR DUPLICATES, LEST THE FIRST SHOULD BE LOST.

WHEN BILLS ARE DRAWN IN SETS, EACH MUST CONTAIN A CONDITION THAT IT SHALL BE PAYABLE ONLY WHILE THE OTHERS REMAIN UNPAID.

which a planet acquires in certain signs or parts of the zodiac, which dignity is supposed to give it an extraordinary efficacy and influence.——In pharmacy, the refinement or subtilization of bodies or their qualities and virtues.

EXAMINA'TION, in its primary sense, is a careful and accurate inspection or inquiry, in order to discover the real state of any thing.——In judicial proceedings, an attempt to ascertain truth, generally on the oath of the party examined, by interrogatories.——In schools, an inquiry into the acquisitions of the students, by questioning them in literature and the sciences, or by hearing their recitals.——In chemistry and the sciences generally, a searching for the nature and qualities of substances, by experiments.

EXAM'INERS, in law, two officers in the court of Chancery, who are appointed, on oath, to examine witnesses on either side.

EXAN'THEMA, or EXANTHEM'ATA, among physicians, any kind of efflorescence or eruption, as in measles, small-pox, scarlatina, &c. The term is now limited by systematic nosologists, to such eruptions as are accompanied with fever.——The adjective is *exanthematous*.

EXANTHRO'PIA, in medicine, a species of melancholy madness, in which the patient fancies himself a brute.

EX'ARCH, in antiquity, an officer sent by the emperors of the East into Italy, as prefect or governor.——*Exarch* also denotes an officer still subsisting in the Greek church, who visits the provinces, in order to see whether the bishops and clergy do their duty.

EXARTICULA'TION, in surgery, the dislocation of a joint.

EXAUCTORA'TION, or EXAUTHORA'TION, in Roman antiquity, temporary dismission from service: thus the *exauctori milites* were deprived of their pay and arms, without being absolutely discharged.

EXCALCEA'TION, among the Hebrews, was a law, whereby a widow, whom her husband's brother refused to marry, had a right to summon him to a court of justice, and, upon his refusal, might *excalceate* him, that is, pull off one of his shoes, and spit in his face; both of which were considered actions of great ignominy.

EX'CELLENCY, a title of honour formerly given to kings and emperors, but now given to governors, ambassadors, &c. who are elevated by virtue of particular offices. The title of excellency is in no case hereditary, or transferable from one member to another, but always belongs to the office, and is only borne, on the European continent, by ministers in actual service, by the highest court and military dignitaries, and by ambassadors and plenipotentiaries. Foreign ministers are addressed by the title of *your excellency*, by way of courtesy, even if they have no rank which entitles them to this distinction; but *chargés d'affaires* never receive this title.

EXCEP'TION, in law, the denial of what is alleged and considered as valid by the other party, either in point of law or in pleading.——*Bill of exceptions*, is a statement of exceptions to evidence, filed by the party, and which the judge must sign or seal.

EXCESS', in arithmetic and geometry, is the difference between any two unequal numbers or quantities, or that which is left after the less is taken from or out of the greater.——In morals, any indulgence of appetite or passion, beyond the laws of God or the rules of propriety.

EXCHA'NGE, in commerce, traffic by permutation, or the act of giving one thing or commodity for another. The receipt or payment of money in one country for the like sum in another, by means of *bills of exchange*. Thus, *A* in London is creditor to *B* in Paris, to the amount of 100*l*. *C* in London is debtor to *D* in Paris, in a like sum: by the operation of the bill of exchange, the London creditor is paid by the London debtor, and the Paris creditor is paid by the Paris debtor; and, consequently, two debts are paid, though no specie is sent from London to Paris, or from Paris to London. This is the principle of a bill of exchange; and the great convenience here represented is the foundation of exchange itself. That variation *above* and *below par*, which is called the course of exchange, results from the same causes that act upon the price of commodities of every other kind. If bills upon Paris be scarce, that is, if Paris is but little indebted to London, the London creditor, who wants bills on Paris to remit to that city, is obliged to purchase them dearly; then the course of exchange is *above par*: if, on the other hand, London owes less to Paris than Paris owes to London, Paris bills will be proportionably plenty, and the exchange with that city *below par*. Hence, it is a maxim that, when the course of exchange rises *above par*, the balance of trade runs against the country where it rises.——In London, bills of exchange are bought and sold by brokers, who go round to the principal merchants, and discover whether they are buyers or sellers of bills. A few of the brokers of most influence, after ascertaining the state of the relative supply of and demand for bills, suggest a price at which the greater part of the transactions of the day are settled, with such deviations as particular bills, from their being in very high or low credit, may be subject to. In London and other great commercial cities, a class of middle-men speculate largely on the rise and fall of the exchange, buying bills when they expect a rise, and selling them when a fall is anticipated.——*Exchange*, in arithmetic, is the finding what quantity of the money in one place is equal to a given sum of another, according to a certain course of exchange.——*Course of exchange* is the current price betwixt two places, which is always fluctuating and unsettled.——*Arbitration of exchange* is a calculation of the exchanges of different places to discover which is the most profitable.

——*Exchange of Prisoners*, in war, the act of giving up men on both sides, upon certain conditions agreed to by the contending parties.

EXCHA'NGE, (often contracted into CHANGE), signifies a building or other place in considerable trading cities, where the merchants, agents, bankers, brokers, and other persons concerned in commerce, meet at certain times, to confer and treat together of matters relating to exchanges, remittances, payments, adventures, assurances, freights, and other mercantile negociations both by sea and land.

EXCHEQ'UER, in British jurisprudence, an ancient court of record, in which all causes concerning the revenues and rights of the crown are heard and determined, and where the crown-revenues are received. It took this name from the cloth that covered the table of the court, which was party-coloured or chequered. This court is said to have been erected by William the Conqueror.——The public Exchequer is under the control of the lords of the Treasury, and of a minister called the chancellor of the exchequer.——To institute a process against a person in this court, is called to *exchequer* him.

EXCHEQ'UER-BILLS, bills for money, or promissory notes, issued from the exchequer, under the authority of government, and bearing interest.

EXCI'SE, an inland duty, paid in some instances upon the commodity consumed, or on the retail, which is the last stage before consumption; but in others this duty is paid at the manufactories. The excise was first introduced by the parliament which beheaded Charles I. and its great founder was Mr. Pym; and is now one of the most considerable branches of the national revenue. It was formerly farmed out, but is at present managed for the government by commissioners, who receive the whole product of the excise, and pay it into the exchequer. ——The officer who inspects exciseable commodities and rates the duties on them is called an *exciseman*.

EXCISION, in surgery, a cutting out, or cutting off any part of the body.

EXCITABIL'ITY, susceptibility of increased vital action by the force of stimulants.

EXCI'TING CAUSES, in medicine, are those which immediately produce disease, or those which excite the action of predisponent causes.

EXCLAMA'TION, emphatical utterance; or the sign by which emphatical utterance is marked: thus (!).——In grammar, a word expressing some passion, as wonder, fear, &c.

EXCOMMUNICA'TION, an ecclesiastical censure, whereby a person is excluded from communion with the church, and deprived of some civil rights. In the present state of church-government in England, excommunication is seldom used but as a sort of writ of outlawry on contempt of the bishop's court, in the several descriptions of causes that belong to ecclesiastical jurisdiction. It is published in the church, and if the offender does not submit in forty days, the civil magistrate interposes, and the excommunicated person is imprisoned till he submits, and obtains absolution.—— The Roman Catholics use the phrase *fulminating an excommunication*, to signify the solemn pronouncing of an excommunication after several admonitions. This fulmination principally consists of curses, execrations, and other odious ceremonies; and is called *anathema*, [which see.]——*Excommunication* amongst the Jews was of three kinds or degrees. The first was called *Niddui*, and was a separation for a few days. The second was *Cherem*, and was a separation attended with execration and malediction; the third was *Shammatha*, and was the last and greater excommunication.——*Excommunication* amongst the Greeks and Romans excluded the person, on whom it was pronounced, from the sacrifices and temples, and delivered him over to the *Furies*.

EXCREMENTI'TIOUS, in medicine, consisting of matter evacuated or proper to be evacuated from the human body.

EXCRES'CENCE, in surgery, a preternatural tumour which arises upon the skin, either in the form of a wart or tubercle.

EXCRE'TION, in medicine, a separation of some fluid, mixed with the blood, by means of the glands. It is also applied to the discharges from the bowels, which are called *alvine excretions*.

EXCU'BIÆ, in antiquity, the watches and guards kept in the day by the Romans, in distinction from *vigiliæ*, which were kept at night.

EX'EAT, in ecclesiastical history, a term employed in the permission which a bishop grants to a priest to go out of his diocese.

EXECU'TION, in law, the completing or finishing some act, as of judgment or deed, and it usually signifies the obtaining possession of any thing received by judgment of law. Also, the carrying into effect a sentence or judgment of court; as the infliction of capital punishment.

EXECU'TIONER, the officer who inflicts capital punishment in pursuance of a legal warrant; the common hangman.

EXEC'UTIVE, in politics, that branch of the government which executes the functions of governing the state. The word is used in distinction from *legislative* and *judicial*. The body that deliberates and enacts laws, is *legislative*; the body that judges or applies the laws to particular cases, is *judicial*; and the body that carries the laws into effect, or superintends the enforcement of them, is *executive*. In all monarchical states this power rests in the prince.

EXEC'UTOR, in law, a person appointed by another's last will and testament, to have the execution of the same after his decease, and the disposing of the testator's goods and effects, according to the intent of the will.

EXEC'UTORY, in law, signifies that which is to take effect on a future contingency; as an *executory* devise or remainder.

EXE'DRÆ, in antiquity, a general name for such buildings as were distinct from the main body of the churches, and yet within the limits of the consecrated ground.

EXEGE'SIS, a discourse intended to explain or illustrate a subject.

EXEM'PLAR, a pattern or model; the ideal model which an artist attempts to imitate.——That which serves as a model for imitation, or as a warning for others, is termed *exemplary*; as, *exemplary* justice; *exemplary* punishment.

EXEQUA'TUR, an official recognition of a person in the character of consul or commercial agent, authorizing him to exercise his powers.

EX'ERCISE, the exertion of the body, for health, amusement, labour, or the attainment of any art. Exercise increases the circulation of the blood, attenuates and divides the fluids, and promotes a regular perspiration, as well as a due secretion of all the humours; for it accelerates the animal spirits, and facilitates their distribution into all the fibres of the body, strengthens the parts, creates an appetite, and helps digestion. Whence it arises, that those who accustom themselves to exercise are generally very robust, and seldom subject to diseases. It should never be forgotten by those of studious habits, that the delicate springs of our frail machines lose their activity, and the vessels become clogged with obstructions, when we totally desist from exercise; from which consequences arise which necessarily affect the brain: a mere studious life is therefore equally prejudicial to the body and the mind. We may further observe, that an inclination to study ought not to be carried to the extent of aversion to society and motion. The natural lot of man is to live among his fellows; and whatever may be his situation in the world, there are a thousand occasions wherein his physical energies may be rendered serviceable to his fellow-creatures, as well as to himself. Many rational causes have therefore given rise to the practice of particular exercises; and those legislators who deserve to be called the most sagacious and benevolent, have instituted opportunities for enabling youth who devote themselves to study, to become expert also in laudable exercises. "We shall walk, run, dance, swim, fence, sail, and ride to little purpose (says Dr. Tissot), unless we make choice of an agreeable friend to accompany us. Solitude is the bane of man; insomuch, that it is difficult to tell which suffers most, the soul in its qualities, or the body in its temperament, from being alone. Too great a concourse of people breeds disease. Too much company is destructive to cheerfulness. For the sake of both mind and body, therefore, we should move in a little circle, and let heaven circumscribe it for us."——*Mental exercise* is the exertion of the mind or faculties for improvement, as in the various branches of literature, art, and science.——*Military exercise* consists in the use of arms, in marches, evolutions, &c.——*Naval exercise* consists in the management of artillery, and in the evolutions of fleets.

EXER'GUE, a term used by medallists to denote the little space around and without the work or figures of a medal for an inscription, &c.

EXFOLIA'TION, in surgery, the scaling of a bone; the process of separating, as pieces of unsound bone from the sound part.——In mineralogy also, to *exfoliate* is to scale off or separate in thin laminæ.

EXHALA'TION, a general term for all effluvia or steams raised from the surface of the earth, in form of vapour.

EXHAUST'ION, in mathematics, a method of proving the equality of two magnitudes by a *reductio ad absurdum*, or showing that if one is supposed either greater or less than the other, there will arise a contradiction.

EXHEREDA'TION, in the civil law, a father's excluding a child from inheriting any part of his estate.

EXHIB'IT, any paper produced or presented to a court or to auditors, referees, or arbitrators, as a voucher, &c.——In chancery, a deed or writing produced in court and sworn to, and a certificate of the oath indorsed on it by the examiner or commissioner.

EXHIBI'TION, a public display of whatever is interesting either as a matter of art or curiosity. Also, a benefaction settled for the benefit of scholars in the universities, that are not on the foundation. The person receiving this is called an *exhibitioner*.——*Exhibition* was anciently an allowance for meat and drink, such as the religious appropriators made to the poor depending vicar.

EXHUMA'TION, the digging up of a dead body that has been interred.

EX'IGENT, in law, a writ or part of the process of outlawry. The *exigent* or *exigi facias* requires the defendant to be proclaimed in five county courts successively, to render himself; and if he does not, he is outlawed.

EX'ILE, a state of banishment or expulsion from one's country by authority; or it may be an abandonment of one's country, for a foreign land, from disgust or any other motive, which is called *voluntary exile*.

EXISTENCE, the state of being, or having an actual essence. Mr. Locke says, that we arrive at the knowledge of our own existence, by intuition; of the existence of God, by demonstration; and of other things, by sensation. As for our own existence, continues he, we perceive it so plainly, that it neither needs, nor is capable of, any proof. I think, I reason, I feel pleasure and pain; can any of these be more evident to me than my own existence? If I doubt of all other things, that very doubt makes me perceive my own existence, and will not suffer me to doubt. If I know I doubt, I have as certain a perception of the thing doubting, as of that thought which I call doubt: experience then convinces us, that we have an intuitive knowledge of our own existence.

REAL CRIMINALS ARE AT PRESENT SELDOM EXILED, AS IT IS UNJUST TO LET LOOSE OUR OFFENDERS UPON NEIGHBOURING STATES.

THE ANCIENT REPUBLICS SOMETIMES EXILED MEN ON MERE SUSPICION THAT THEY MIGHT BECOME DANGEROUS TO REPUBLICAN LIBERTY.

EX'IT, a departure; a term used to denote the action of quitting the stage by a player after he has performed his part. Figuratively, the act of quitting this mortal existence.

EXOCŒ'TUS, or Flying-fish, in ichthyology, a genus of fishes, of which there are three species. The *Exocœtus exiliens*, or the Mediterranean flying-fish, is about fourteen inches in length, and found principally in the Mediterranean and Atlantic seas, frequently alone, and sometimes in small companies. By the extraordinary length of its pectoral fins it is enabled to quit the water and support a flight, about three feet above the surface, for the distance of 80 or 100 yards; after which it is obliged to return to the water and moisten its fins, which even in this short progress become hard and dry. The fishes are persecuted by the dorado under the water, and by the gull or albatross above its surface, and thus often escape destruction by the one only to incur it from the other.

EXO'DIA, amongst the Romans, were a sort of after-pieces, performed by young gentlemen when the play was concluded. They bore no relation to the drama before exhibited; but were intended to revive, or rather improve the Fescennine verses, which had fallen into disuse. Professional actors never performed any part in the *Exodia*.

EX'ODUS, a canonical book of the Old Testament; being the second of the Pentateuch, or five books of Moses. It contains a history of the departure of the children of Israel from Egypt; from which it received its name.

EX'ODE, in the Greek drama, the concluding part of a play, or that part which comprehends all that occurs after the last interlude.

EX OFF''ICIO, in law, the power a person has, by virtue of his office, to do certain acts without special authority.——*Ex-officio informations* are prosecutions commenced at the suit of the king, in cases of such great danger, as that the safety of the state might be involved by waiting for the usual course of law.

EX'OGLOSS, a genus of fishes found in the American seas, whose lower jaw is trilobed, and the middle lobe protruded serves as a tongue.

EXOM'PHALOS, in surgery, a rupture of the navel.

EX'ORCISM, the expulsion of evil spirits from persons or places by certain adjurations and ceremonies. Exorcism makes a considerable part of the superstition of the church of Rome, the rituals of which forbid the exorcising any person without the bishop's leave.——From many passages in Irenæus, Origen, Epiphanius, and Josephus, it is evident that the Jews about our Saviour's time, pretended to a power of casting out devils, by some arts or charms derived from Solomon. For a further proof of their pretensions in this respect, see Acts xix. 13, Mark ix. 38, Luke ix. 59. Exorcists in the ancient christian church, were employed in casting out demons, and were ordained for that express purpose.

EX'ORCIST, one who by prayers and incantations professes to cast out evil spirits.

EXOR'DIUM, in rhetoric, the commencement of a speech, serving to prepare the audience for the main subject. It may be formal and deliberate, or abrupt and vehement, according to the nature of the subject and occasion.

EXOS'TOSIS, in surgery, a preternatural eminence or excrescence of a bone, whether attended with an erosion or not.

EXOS'TRA, in antiquity, a bridge thrust out of a turret by pullies on the walls, by which the besiegers gained an entrance into the town.

EXOTER'ICÆ, in rhetoric, a term applied to such of Aristotle's lectures as were open to all persons.

EXOT'IC, an appellation for the produce of foreign countries. Exotic plants are such as belong to a soil and climate entirely different from the place where they are raised, and therefore can be preserved for the most part only in green-houses.

EXPANSIBIL'ITY, the capacity for extension in bulk or surface.

EXPAN'SION, in natural philosophy, the enlargement or increase of bulk in bodies, chiefly by means of heat. This is one of the most general effects of caloric, being common to all bodies whatever, whether solid or fluid, or in an aeriform state. In some cases bodies seem to expand as they grow cold, as water in the act of freezing; this, however, is known to be no exception to the general rule, but is owing to the arrangement of the particles, or to crystalization, and is not a regular and gradual expansion like that of metals, or other solid substances, by means of heat. In various metals likewise an expansion takes place in passing from a fluid to a solid state, which is accounted for in the same way. The degree of expansion produced in different liquids, varies very considerably. In general, the denser the fluid, the less the expansion: water expands more than mercury; and alcohol, which is lighter than water, expands more than water. The expansion of aeriform fluids may be exhibited by bringing a bladder, partly filled with air, and the neck closely tied, near the fire; the bladder will soon be distended, and, if the heat be strong enough, will burst.——We also apply the word *expansion* to surface, as the expansion of a sheet of water, but not to a line or length without breadth.

EX-PARTE, in law, on one side, as *ex-parte* statement, a partial statement, or that which is made on one side only.

EXPATRIATION, the forsaking one's own country, with a renunciation of allegiance, and with a view of becoming a permanent resident and citizen in another country.

EXPECTANT, in law, an epithet for whatever has a relation to, or dependence upon another.

EXPECTANCY, in law, a state of waiting or suspension. An *estate in expectancy* is one which is to take effect or commence after the determination of another estate.

Estates of this kind are *remainders* and *reversions*.

EXPECTA'TION, in the doctrine of chances, is applied to any contingent event, upon the happening of which some benefit is expected.——*Expectation* differs from *hope* in this: hope originates in desire, and may exist with little or no ground of belief that the desired event will arrive; whereas expectation is founded on some reasons which render the event probable.——*Expectation*, of life, is a term used to express the number of years, which, according to the experience of bills of mortality, persons at any age may be expected to live.

EXPECTORANTS, those medicines which promote expectoration, or a discharge of mucus from the trachea and lungs.

EXPE'DIENT, a temporary means of effecting an object, without regard to ulterior consequences.

EXPEDI'TATE, in the English forest laws, is to cut out the balls or claws of a dog's fore-feet, for the preservation of the royal game.

EXPEDI''TION, the march of an army, or the voyage of a fleet, to a distant place, for hostile purposes; as, the *expedition* of the English to Holland; the *expedition* of the French to Egypt.

EXPE'RIENCE, the source of knowledge arising from the faculty of memory, and the power of reasoning by analogy. Thus, we learn the instability of human affairs by observation or by *experience*.

EXPERI'MENT, an act or operation designed to discover some unknown truth, principle, or effect.——In chemistry, a trial of the results of certain applications and motions of natural bodies, in order to discover something of their laws, nature, &c. ——*Experimental* knowledge is the most valuable, because it is most certain, and most safely to be trusted.

EXPERIMENTAL PHILOSOPHY, those branches of science, the deductions in which are founded on experiment, as contrasted with the moral, mathematical, and speculative branches of knowledge. The principal experimental science is Chemistry: but there are many others, as, Optics, Pneumatics, Hydrostatics, Electricity, Magnetism, &c.

EXPERIMEN'TUM CRU'CIS, a leading or decisive experiment.

EXPIA'TION, a religious ceremony, by which satisfaction is made for sins of omission or commission, accidental or intentional. The chief mode of expiation among the Jews and Pagans was by sacrifice.——*Expiation*, in a figurative sense, is applied by divines to the pardon procured to men's sins, by the obedience and death of Christ.

EXPIRA'TION, in anatomy, that part of respiration which consists in expelling the air out of the lungs.

EXPLO'SION, in natural philosophy, a sudden and violent expansion of an aerial, or other elastic fluid, by which it instantly throws off any obstacle that happens to be in the way, sometimes with incredible force, and in such a manner as to produce the most astonishing effects. It differs from mere expansion, by being sudden and violent, while the latter acts gradually and uniformly for some time.

EXPO'NENT, in algebra, the number or figure which, placed above a root at the right hand, denotes how often that root is repeated, or how many multiplications are necessary to produce the power.——*Exponential curves* are such as partake both of the nature of algebraic and transcendental ones.

EXPORTA'TION, that part of foreign commerce which consists in sending out goods for sale, and which is therefore the *active* part of trade, as importation, or the purchasing of goods is the passive.——We apply the word *exports* to goods or produce which are sent abroad or usually exported.

EXPOS'ITOR, one who explains the writings of others; it is applied particularly to those who profess to expound the Scriptures.

EX POST FACTO, (literally, from something done afterwards), as an *ex post facto* law, a law which operates upon a subject not liable to it at the time the law was made.

EXPOSTULA'TION, in rhetoric, a warm address to a person, who has done another some injury, representing the wrong in the strongest terms, and demanding redress.

EXPRESS', a messenger or courier sent to communicate information of an important event, or to deliver important dispatches.

EXPRESS'ED OILS, in chemistry, such oils as are procured from any substance by simple pressure, as the oil of almonds, &c.

EXPRES'SION, in painting, the distinct and natural exhibition of character or of sentiment in the characters represented. The term expression is frequently confounded with that of passion, but they differ in this, that *expression* is a general term, implying a representation of an object agreeably to its nature and character, and the use or office it is to have in the work; whereas *passion*, in painting, denotes a motion of the body, accompanied with certain indications of strong feeling pourtrayed in the countenance; so that every passion is an expression, but not every expression a passion.——*Expression*, in rhetoric, the elocution, diction, or choice of words suited to the subject and sentiment.——In music, the tone and manner which give life and reality to ideas and sentiments.——*Theatrical expression*, is a distinct, sonorous, and pleasing pronunciation, accompanied with action suited to the sentiment

EXPROPRIA'TION, the surrender of a claim to exclusive property.

EXPUI''TION, in medicine, a discharge of saliva by spitting.

EXPURG'ATORY, serving to purify from anything noxious or erroneous; as the *expurgatory* index of the Romanists, which directs the expunction of passages of authors contrary to their creed or principles.

EXSAN'GUIOUS, an epithet for animals which are destitute of red blood.

THE EXPLOSIVE FORCE OF A VOLCANO IS SOMETIMES SUCH AS TO THROW A STONE OF TWO HUNDRED TONS A DISTANCE OF EIGHT MILES.

THE FORCE OF AN EXPLOSION DEPENDS ON THE QUANTITY OF THE ELASTIC FLUID, AND THE VELOCITY IT ACQUIRES BY HEAT.

EXTRACT, IN PHARMACY, INCLUDES ALL THOSE VEGETABLE PREPARATIONS WHICH ARE OBTAINED IN A SOLID STATE FROM SOLUTIONS.

EXSICCA'TION, the act of drying, or the evaporation of moisture.

EXSTIP'ULATE, in botany, an epithet for plants which have no stipulus.

EXSUDA'TION, in medicine, a discharge of humours or moisture from animal bodies, by sweat or extillation through the pores.

EX'TANT, an epithet for anything which still subsists or is in being; as a part only of the writings of Cicero are *extant*.

EXTEM'PORE, without previous study or meditation; as he writes or speaks *extempore*. Though an adverb, it is often unnecessarily and improperly used as an adjective; as an *extempore* sermon, instead of an *extemporary* or *extemporaneous* sermon, &c. ——To *extemporize* well, requires a ready mind well furnished with knowledge.

EXTEN'SION, in philosophy, one of the common and essential properties of body, or that by which it occupies some part of universal space.

EXTEN'SOR, in anatomy, an appellation given to several muscles, from their extending or stretching the parts to which they belong.

EXTENT', in law, is used in a double sense; sometimes it signifies a writ or command to the sheriff for the valuing of the lands or tenements of a debtor; and sometimes the act of the sheriff, or other commissioner, upon this writ; but most commonly it denotes an estimate or valuation of lands. ——*Extent in aid*, a seizure made by the crown, when a public accountant becomes a defaulter, and prays for relief against his creditors.

EXTENUA'TION, the act of representing anything less faulty or criminal than it is in fact; it is opposed to *aggravation*.

EXTIN'GUISHMENT, in law, the annihilation of an estate, &c. by means of its being merged or consolidated with another.

EXTOR'TION, the unlawful act of any person in authority, who by colour of his office, takes money or any other thing when none is due. Whenever property of any kind is wrested from a person by menace, duress, violence, authority, or by any illegal means, it is *extortion*. The word *extort* has a very wide signification. Conquerors *extort* contributions from the vanquished; officers often *extort* illegal fees; confessions of guilt are *extorted* by the rack; promises which men are unable to perform are sometimes *extorted* by duress, &c.

EX'TRA, a Latin preposition denoting beyond or excess; as *extra-work, extra-pay*, &c. It serves as a prefix to numerous English words.

EX'TRACT, in literature, some select matter or sentence taken from a book. ——In law, a draught or copy of a writing.——In chemistry, the purer parts of any substance extracted from its grosser parts by means of decoction, and formerly also by distillation, until they were of the consistence of paste.——*Extractive principle*, a peculiar principle supposed to form the basis of all vegetable *extracts*.

EXTRAFOLIA'CEOUS, in botany, an epithet for that which grows on the outside of a leaf.

EXTRAJUDI'CIAL, out of the ordinary course of legal proceedings.

EXTRAMUN'DANE, beyond the limit of the material world.

EXTRAORDINA'RII, in Roman antiquity, a chosen body of men consisting of a third part of the foreign horse, and a fifth of the foot, which was separated from the rest of the forces borrowed from the confederate state, with great policy and caution; to prevent any design that they might possibly entertain against the natural forces.

EXTRAVAGAN'ZA, in music, the Italian for a kind of composition remarkable for its wildness and incoherence.——Irregular dramatic pieces, generally of the burlesque cast, are also sometimes called extravaganzas.

EXTRAVASA'TION, in contusions and other accidents of the cranium, is when one or more of the blood-vessels distributed on the *dura mater* are broken, whereby there is such a discharge of blood as oppresses the brain, frequently bringing on violent pains, and at length death itself, unless the patient is timely relieved.

EXTRE'ME, the utmost point, or furthest degree; as the *extremes* of heat and cold; the *extremes* of virtue and vice.——In logic, the extreme terms of a syllogism are the predicate and subject. Thus, "Man is an animal: Henry is a man, therefore Henry is an animal;" the word animal is the greater extreme, Henry the less extreme, and man the medium.——In mathematics, the *extremes* are the first and last terms of a proportion.

EXTREM'ITY, in its primary sense, signifies the utmost point or border of a thing. It also denotes the highest or furthest degree; as the *extremity* of pain or suffering; or the Greeks have endured oppression in its utmost *extremity*.—— In painting and sculpture, the *extremities* of the body, are the head, hands, and feet.—— In anatomy, this term is applied to the limbs, as distinguishing them from the other divisions of the animals, the head and trunk. The extremities are four in number, divided, in man, into upper and lower; in other animals, into anterior and posterior. Each extremity is divided into four parts; the upper into the shoulder, the arm, the fore-arm, and the hand; the lower into the hip, the thigh, the leg, and the foot.

EXU'VIÆ, in natural history, the cast skins, shells, or coverings of animals.——In geology, the spoils or organic remains of animals found in the earth, supposed to be deposited there at the deluge, or in some great convulsion or change which the earth has in past periods undergone.

EY'AS, in ornithology, a young hawk just taken from the nest, not able to procure its own food.

EYE, in anatomy, the organ of sight, or that part of the body, whereby visible objects are represented to the mind. The eye-ball is the immediate agent in refracting the rays of light, and collecting them

EXTRACTS SHOULD ALWAYS BE PREPARED, IF POSSIBLE, FROM THE JUICE OF THE FRESH PLANT, UNDER POWERFUL PRESSURE.

into a point, so as to form an image of the object from which they are reflected. For this purpose, there is in it a series of perfectly transparent parts, which execute the various refractions, a nervous pulp on which the rays of light thus refracted make an impression to be conveyed to the sensorium by the optic nerve. The visual organ, simple when thus considered, becomes much more complicated if we include all the apparatus added for the purposes of protection or assistance. The muscles which move the globe in various directions, the eye-lids, which cover and protect in front, and the parts which secrete the tears, and convey them into the cavity of the nostril, are all so intimately connected in situation and function with the globe, that they must be included in the general description. In speaking of the mechanism of the organ of vision, we may not improperly liken it to a natural camera-obscura, provided with a lens, which, at the back of the eye, forms a picture, on an expansion of the nerves, called the retina. When the lens is too convex, the picture falls short of the nerve, and the person is short-sighted: when the picture tends to form beyond the nerve, owing to the lens not being sufficiently convex, then the person is long-sighted. In the first case, a concave glass is required, and in the latter a convex glass, as in aged persons.——The word *eye* is used in a vast variety of senses, both literal and figurative.——*Eye*, in architecture, is used to signify any round window, made in a pediment, an attic, the reins of a vault, &c.——*Eye of a dome*, an aperture at the top of a dome, as that of the Pantheon at Rome, or of St. Paul's at London; it is usually covered with a lantern.——*Eye of the volute*, is the centre of the volute, or that point in which the helix, or spiral of which it is formed, commences.——*Eye*, in gardening, signifies a little bud or shoot, inserted into a tree, by way of graft.——*Eye of an apple, a pear, &c.*, the extremity opposite to the stalk.——*Eye of the anchor*, the hole wherein the ring of the anchor is put into the shank.——*The eyes of a ship*, are the parts which lie near the hawse-holes, particularly in the lower apartments.

EY'EBOLT, in ships, a bar of iron or bolt, with an eye, formed to be driven into the deck or sides, for the purpose of hooking tackle to.

EY'EBRIGHT, or EUPHRA'SIA, a genus of plants, of several species.

EY'EGLASS, in telescopes, the glass next the eye: and where there are several, all except the object-glass are called eye-glasses. Also, a glass to assist defective vision.

EY'E-SERVICE, service performed only while under the inspection of an employer.

EY'ESTONE, a small calcareous stone used for taking substances from between the lid and ball of the eye.

EY'RIE, or EY'RY, the place where birds of prey construct their nests.

F.

F, the sixth letter of the alphabet, is a labial articulation, formed by placing the upper teeth on the under lip, and accompanied with an emission of breath. Its kindred letter is v, which is chiefly distinguished from *f* by being more vocal. The Romans for some time used F inverted thus, Ⅎ, for V consonant, as DIⅎI for DIVI. Some have supposed that this was one of the three letters invented by Claudius, but many inscriptions belonging to periods much anterior to the time of Claudius exhibit this singular use of this letter. F, as a numeral, with the Romans, signified 40; with a dash over it, 40,000. On medals, monuments, &c., F stands for *Fabius, Furius, Felix, Faustus*, &c.—With merchants, *f* signifies *folio* (page). *F* often stands in medical prescriptions and on documents for *fiat* (let it be made or done). F also stands for *fellow*, as F.A.S. *Fraternitatis Antiquariorum Socius*, or Fellow of the Antiquarian Society.——*Fl.* is the abbreviation for *florin*, or guilder; and *fr.* for *franc*.——In music, *f* over a line, means *forte*; *ff*, *molto forte*; and F is the nominal of the fourth note in the natural diatonic scale of C.

FA, in music, one of the syllables invented by Guido Aretine, to mark the fourth note of the modern scale, which rises thus, *ut, re, mi, fa*.

FA'BIAN, an epithet signifying that line of military tactics which declines the risking of a battle in the open field, but seeks every opportunity of harassing the enemy by countermarches, ambuscades, &c. It is so called from Q. Fabius Maximus, the Roman general opposed to Hannibal.

FA'BLE, a fictitious narration, or species of didactic allegory, which may be described as a method of inculcating practicable rules of worldly prudence or wisdom, by imaginary representations drawn from the physical or external world. It consists, properly of two parts: the symbolical representation, and the application of the instruction intended to be deduced from it, which latter is called the *moral* of the tale, and must be apparent in the fable itself, in order to render it poetical. The satisfaction which we derive from fables does not lie wholly in the pleasure that we receive from the symbolical representation, but it lies deeper, in the feeling that the order of nature is the same in the spiritual and ma-

THOSE IMPRESSIONS ON THE EYE ARE PERMANENTLY CONTINUOUS, WHICH ARE REPEATED SEVEN TIMES IN A SECOND.

THE AQUEOUS HUMOUR OF THE EYE IS MORE ABUNDANT IN HIGH FLYING BIRDS THAN IN ANIMALS NEARER THE GROUND.

terial worlds: and the fabulist, whose object is not merely to render a truth perceptible by means of a fictitious action, chooses his characters from the brute creation.—Some fables are founded upon irony; some are pathetic; and some even aspire to the sublime: but, generally speaking, a fable should possess unity, that the whole tenor of it may be easily seen; and dignity, since the subject has a certain degree of importance.—We find that fables have been highly valued, not only in times of the greatest simplicity, but among the most polite ages of the world. Jotham's fable of the trees is the oldest that is extant, and as beautiful as any that have been made since. Nathan's fable of the poor man is next in antiquity, and had so good an effect as to convey instruction to the ear of a king. We find Æsop in the most distant ages of Greece; and in the early days of the Roman commonwealth, we read of a mutiny appeased by the fable of the belly and the members. To which we may add, that although fables had their rise in the very infancy of learning, they never flourished more than when learning was at its greatest height.——*Fable* is also used for the plot of an epic or dramatic poem, and is, according to Aristotle, the principal part, and, as it were, the soul of a poem. In this sense the fable is defined to be a discourse invented with art, to form the manners by instruction, disguised under the allegory of an action.

FAB'RIC, in general, denotes the structure or construction of anything; but particularly of buildings, as a church, hall, house, &c. It is also applied to the texture of cloths, or stuffs; as this is cloth of a beautiful *fabric*.

FAB'ULOUS AGE, that period in the history of every nation in which supernatural events are represented to have happened. The fabulous age of Greece and Rome is called also the *heroic* age.

FACA'DE (pron. *fassa'de*), in architecture, the front or external aspect of an edifice. As in most edifices only one side is conspicuous, viz. that which faces the street, and usually contains the principal entrance, this has been denominated, *par eminence*, the facade.

FACE, in anatomy, the front part of the head, and the seat of most of the senses, comprising the forehead, the eyes and eyelids, the nose, cheeks, mouth, and chin. The bones of the face are divided into those of the upper and under jaw: the upper consists of thirteen bones, and the under is formed of one bone. The muscles of the face are those of the eye-lid, eye-ball, nose, mouth, and lips. The human face is called the image of the soul, as being the place whence the ideas, emotions, &c. of the soul are chiefly set to view. Nor can it be denied that the character of each individual is often strongly marked by the conformation of the countenance: physiognomy, therefore, in a certain degree, always has existed: but the great question is, how far we can reduce our experience to certain rules. For our own parts, we believe that both physiognomists and phrenologists have carried their speculations to an absurd length. ——*Face*, among painters and artists, is used to denote a certain dimension of the human body, adapted for determining the proportion which the several parts should bear to one another: thus the different parts of the body are said to consist, in length, of so many *faces*.——We also use the word *face* in speaking of the surface of a thing, or the side presented to the view of a spectator; as, the *face* of the earth; the *face* of the sun; the *face* of a stone, &c.

FA'CETS, the name of the little faces or planes to be found in brilliant and rose diamonds.

FA'CIAL LINE OR ANGLE. These terms are used in describing the conformation that exists in the bones of the face, &c. and which so strikingly characterizes the varieties of the human race. On the relation of the jaw to the forehead is founded the *facial line*, discovered by Peter Camper. Suppose a straight line drawn at the base of the skull, from the great occipital cavity across the external orifice of the ear to the bottom of the nose. If we draw another straight line from the bottom of the nose, or from the roots of the upper incisor teeth to the forehead, then both lines will form an angle which will be more acute the less the shape of the face, in brutes, resembles that of men. In apes, this angle is only from 45° to 60°; in the orang-outang, 63°; in the skull of a negro, about 70°; in a European, from 75° to 85°. In Grecian works of statuary, this angle amounts to 90°: In the statues of Jupiter, it is 100°.

FA'CIES HIPPOCRATICA, in medicine, that death-like appearance which consists in the nostrils being sharp, the eyes hollow, the temples low, the tips of the ears contracted, the forehead dry and wrinkled, and the complexion pale or livid. It is so called from Hippocrates, by whom it has been so justly described in his prognostics.

FAC-SIM'ILE, an imitation of an original in all its traits and peculiarities. The object of fac-similes is various; but in all cases their perfect accuracy is indispensable.

FAC'TION, a party in political society, combined or acting in union, in opposition to the prince, government, or state; usually applied to a minority, but it may be applied to a majority. Rome was almost always disturbed by factions; and the best interests of Britain are at this hour woefully neglected, owing to the continual ferment into which the country is thrown by different factions.

FACTI'TIOUS, in chemistry, &c., any epithets for what is made by art, in distinction from what is produced by nature; as, *factitious* cinnabar; *factitious* air.

FAC'TOR, in commerce, an agent or correspondent residing in some remote part, commissioned by merchants to buy or sell goods on their account, to negociate bills of exchange, or to transact other business for them. It is universally held in courts

of law and equity, that the principal is held liable for the acts of his agent, provided that the conduct of the latter be conformable to the common usage and mode of dealing; but an agent cannot delegate his rights to another so as to bind the principal, unless expressly authorised to nominate a sub-agent. [For more special information on this important subject, see the act 6 Geo. IV. c. 94.]——*Factor*, in arithmetic, a name given to the multiplier and multiplicand, because they constitute the product: thus 4 and 5 are the factors of 20. Also an algebraic term, answering to the divisor in arithmetic.——Establishments for trade, in foreign parts of the world, are called *factories*.——The word *factory* is now also used for a manufactory on an extensive scale.

FACTORAGE, the allowance or percentage given to factors by the merchants and manufacturers, &c. who employ them; and which is usually fixed by special agreement between the merchant and factor.

FAC'ULÆ, in astronomy, a name given to certain bright spots in the sun.

FAC'ULTY, a term used to denote the powers or capacities of the human mind, viz. understanding, will, memory, imagination, &c.——If it be a power exerted by the body alone, it is called a *corporeal* or animal faculty; if it belong to the mind, it is called a *rational* faculty. And it may further be distinguished into the *natural* faculty, or that by which the body is nourished; and the *vital*, or that by which life is preserved, &c.——*Faculty*, a term applied to the different members or departments of an university, divided according to the arts and sciences taught there. In most universities there are four faculties; of arts, including humanity and philosophy; of theology; of physic; and of civil law. The degrees in the several faculties of our universities are those of bachelor, master, and doctor.——*Faculty*, in law, a privilege granted to a person, by favour and indulgence, of doing that which, by the strict letter of the law, he ought not to do.——*Faculty of Advocates*, a term applied to the college or society of advocates in Scotland, who plead in all actions before the court of session, justiciary and exchequer.

FÆCES, in chemistry, dregs, impurities, or sediment, that settles at the bottom after distillation, fermentation, &c.

FAGA'RA, in botany, a genus of plants, class 4 *Tetandria*, order 1 *Monogynia*. The species are shrubs.

FAGO'NIA, in botany, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*. The species are perennials.

FA'GUS, in botany, the beech-tree, a genus of the *monœcia* order of the *polyandria* class. It contains three species: of which the beech-tree rises to the height of 60 or 70 feet, and in stateliness and grandeur of outline vies with the oak. Its leaves are oval and serrated; its flowers are produced in globular catkins, and are succeeded by angular fruit, called *mast*, which, like acorns, serves as food for swine. Its bark has a peculiar silvery appearance, which, added to the gracefulness of its growth and the elegance of its foliage, renders it a beautiful object in forest scenery. Its wood is much employed in turnery, and for chairs. The chesnut-tree, another species, often grows to a vast size, and was formerly much used for the purposes of building. It is now used for liquor casks and other purposes; and its fruit is valuable for swine and deer.

FAH'LERZ, in mineralogy, gray copper ore; sometimes called tetrahedral copper pyrite.

FAH'LUNITE, in mineralogy, a subspecies of octahedral corundum.

FAIENCE, or Imitation Porcelain, a kind of pottery, superior to the common sorts in its glazing, beauty of form, and richness of painting. It derived its name from the town of Faenza, in Romagna, where it is said to have been invented in 1299. It reached its highest perfection in the 16th century; and some pieces were painted by the great artists of the period, which are highly valued as monuments of early art.

FAINTS, (in the distillation of whiskey) the weak spirituous liquor that runs off from the still after the proof spirit is taken away. This crude spirit is much impregnated with fetid essential oil, and is therefore very unwholesome.

FAIR, a kind of market, on a most extensive scale, granted to a town, by privilege, for the more speedy and commodious providing of such things as the place stands in need of. It is incident to a fair, that persons shall be free from being arrested in it for any other debt contracted than what was contracted in the same; or, at least, promised to be paid there. The most important fairs now held are probably those of Germany, and particularly the Leipsic fairs, where books form so important a branch of its commerce. But neither at home nor abroad can they have the importance they formerly had, because the communication between different parts of a country has become so easy, that merchandize may now be readily obtained direct from the places where it is produced or manufactured. It cannot have escaped general observation, that many fairs are held on church holidays; which is thus accounted for: Gregory the Great, in order to render popular the festival of the patron saints of churches, encouraged the people, on the day of the festival, to erect booths of branches about the church, and to feast therein, and amuse themselves with innocent pastimes. This custom was introduced into England from the continent, and must have been equally familiar to the Britons and Saxons, being observed among the churches of Asia and Europe in the sixth century, and by those of Western Europe in the seventh. As the people resorted in crowds to the festival, a considerable provision would be naturally required for their entertainment. The prospect of interest invited the little traders of the country to

THE THREE LEIPSIC FAIRS, VIZ. NEW-YEAR'S FAIR, EASTER FAIR, AND ST. MICHAEL'S FAIR, EACH LASTS THREE WEEKS.

THE CITY OF DELFT, IN HOLLAND, WAS AT ONE TIME FAMOUS FOR THE MANUFACTURE OF "FAIENCE," CALLED ALSO DELFT WARE.

come with their wares; thus, among the many pavilions for hospitality in the neighbourhood of the church, various booths were erected for the sale of commodities. Basil expressly mentions the numerous appearance of traders at these festivals in Asia; and Gregory notes the same custom to be common in Europe. And, as the festival was observed on a *feria*, or holy-day, it as naturally assumed to itself, and as naturally communicated to the mart, the appellation of *feria*, or *fair*. [By the act 3 Geo. IV. c. 55, it is ordered, that at all fairs held within ten miles of Temple-bar, business and amusements of all kinds shall cease at 11 o'clock in the evening; and not recommence before 6 o'clock in the morning, under a penalty of 40*s*. to be paid by any master, mistress, or other person, having the care or management of any house, shop, room, booth, standing, &c.]

FAI'RY, an imaginary spirit or being. Fairies were supposed to assume a human form, though they were of an extremely diminutive size, and distinguished by a variety of fantastical actions, good or bad, but never failing to exercise a magic power over mortals. In an age of ignorance, the imagination easily substitutes a poetical mythology in the place of natural causes. The native land of this fairy mythology is Arabia, from whence it was brought to Europe by the Troubadours. The European name *fairy* comes from *fatum*, fate. The Italians still call a fairy, *fata;* and they are often mentioned in the traditions of the Italians, who, as well as the Arabians, had stories of a country inhabited by fairies. After the introduction of them into the romances of Europe, the notion of fairies quickly spread; and the tales of their doings were so fixed in the popular belief, that they were continually seen in ruined castles, or gamboling in the forests by moonlight, &c., so that they did not appear at all extraordinary or unnatural when brought upon the stage by Shakspeare. For a long time *fairy tales* were fashionable; but they multiplied so fast, and occupied so much space in the lighter literature of the day, that satiety produced disgust, and they were at length irrevocably consigned to the nursery.——*Fairy of the mine*, an imaginary being supposed to inhabit mines, wandering about in the drifts and chambers, always employed, yet effecting nothing.—— *Fairy ring or circle*, a phenomenon frequently seen in the fields, consisting of a round bare path with grass in the middle, formerly ascribed to the dances of the fairies. It has been supposed by some, that these rings are the effect of lightning; but a more rational theory ascribes them to a kind of fungus which grows in a circle from the centre outwards, destroying the grass as it extends, while the interior of the circle is enriched by the decayed roots of the fungi.

FAI'RY-STONE, the fossil echinite, abundant in chalk-pits.

FAITH, in divinity and philosophy, the firm belief of certain truths upon the testimony of the person who reveals them. The grounds of a rational faith are, that the things revealed be not contrary to, though they may be above natural reason; that the revealer be well acquainted with the things he reveals; that he be above all suspicion of deceiving us. Where these criterions are found, no reasonable person will deny his assent. Whatever propositions, therefore, are beyond reason, but not contrary to it, are, when revealed, the proper matter of faith.——*Justifying, or saving faith*, signifies perfect confidence in the truth of the Gospel, which influences the will, and leads to an entire reliance on Christ for salvation.—— *Public faith*, is represented on medals sometimes with a basket of fruit in one hand, and some ears of corn in the other; and sometimes holding a turtle-dove. But the most usual symbol, is with her two hands joined together.

FA'KIR, or FA'QUIR, a devotee, or Indian monk. The fakirs are a kind of fanatics in the East Indies, who retire from the world, and give themselves up to contemplation. Their great aim is to gain the veneration of the world by their absurd and cruel penances, outdoing even the mortifications and severities of the ancient Christian anchorets. Some of them mangle their bodies with scourges and knives; others never lie down; and others remain all their lives in one posture. There is also another kind of fakirs, who do not practise such severities, but make a vow of poverty, and go from village to village, prophesying and telling fortunes.

FALCA'DE, in horsemanship, is when the horse throws himself upon his haunches, as in very quick curvets.

FAL'CATED, an epithet for any thing in the form of a sickle: thus, the moon is said to be *falcated* when she appears horned, or in the shape of a sickle.

FAL'CHION, a kind of sword turned up somewhat like a hook.

FAL'CIFORM PROCESS, in anatomy, a process of the *dura mater*, in the form of a *falx*, or sickle, that separates the two hemispheres of the brain.

FALCINEL'LUS, in ornithology, a bird supposed to be of the heron kind, with a long crooked bill; called by some the black heron. It is somewhat larger than a pigeon, and is of a greenish colour, variegated with purple.

FAL'CO, in ornithology, a genus of birds, of the order of the *Accipitres*, which have three toes always before, and only one behind. This genus comprehends the eagle, osprey, hawk, gyr-falcon, buzzard, kite, kestril, &c. For the most part they are rapacious tribes, and feed on putrefied carcases; yet seldom, and never but when pressed by extreme hunger, attack living animals. They are bold, and fly with great speed when high in the air, but slowly in its lower regions; have an exquisite sense of smell, and are very quick-sighted, they are not gregarious, but generally build their nests in clefts of impending rocks.

FAL'CON, a bird nearly allied to the

hawk, about the size of a raven, and capable of being trained for sport, in which it was formerly much employed. It is usually represented in coats of arms with bells on its legs, and also decorated with a hood, virols, rings, &c.

FAL'CONET, a small cannon, or piece of ordnance.

FAL'CONRY, the art of training all kinds of hawks, but more especially the larger sort, called the gentle falcon, to the exercise or sport of hawking. This sport was much practised in Europe and Asia in the chivalric ages, and continued in favour till the 17th century; but the invention of fire-arms gradually superseded it. In France, England, and Germany, falconry was at one time in such high esteem, that during the reign of Francis I. of France, his grand falconer received an annual revenue of 4000 livres; had under him fifteen noblemen and fifty falconers; and enjoyed the privilege of hawking through the whole kingdom at pleasure. The whole establishment, which cost annually about 40,000 livres, attended the king wherever he went, and those who were distinguished for their skill in the sport were loaded with royal favours. In England, falconry was also in high esteem, and there is to this day an hereditary grand falconer (the duke of St. Alban's), who, by virtue of his office, presents the king, or queen regnant, with a cast of falcons on the day of the coronation. A similar service is performed by the representative of the Stanley family in the Isle of Man. In our old books on the art of hawking, it is quite laughable to see what minute directions are given for training and attending to the falcon; and were the subject worthy of the space it would occupy, we should be tempted to copy some of them. In Persia, falcons not only attack all kinds of birds, but even gazelles. They are taught to fasten themselves on the heads of these creatures, and to peck at their eyes, which checks them until the hounds come up. In this way wolves were formerly hunted in Europe. After a long course of training, so as to increase their natural courage and ferocity, they were taken into the field, capped or hooded, so as to see no object but their game; and as soon as the dogs stopped or sprung it, the falcon was unhooded, and tossed into the air after his prey.

FALD'AGE, a privilege which certain lords anciently reserved to themselves of setting up folds for sheep in any fields within their manors, the better to manure them.

FALLING STAR, in meteorology, a phenomenon that is frequently seen, and which has been usually supposed to depend on the electric fluid. Sir Humphry Davy, however, in a lecture delivered at the Royal Institution, gave many reasons against this opinion, and conceived that they are rather to be attributed to falling stones; remarking, that when their appearance is frequent, they have all the same direction. This phenomenon has recently attracted an unusual degree of attention, and given rise to many communications from scientific men in different parts of the world; so much so, indeed, that we cannot hesitate to give, at some length, such observations on them as appear to convey a familiar and pleasing description of them. We must at the same time premise that the observations made have led to different conclusions, and that no well-established theory has sprung from them. After noticing their periodical return for several years on the nights of the 12th and 13th of November, which had also been simultaneously observed from various distant points of the earth; Dr. Olbers came to the conclusion, that they are heavenly bodies of inconsiderable dimensions, but which in common with all others of a similar nature, have a regular motion. And it is inferred that the remarkable and very unequal distribution of those small bodies revolving round the sun, which form the fire-balls and shooting-stars of our planetary system, as well as the general resemblance and nearly similar nature of all the meteoric stones which fall from time to time (taking into consideration both their external characters, and also their chemical composition), seem to indicate, not only that they have one common origin, but also that it was one common cause which has thus hurled them into space. But, in reference to this theory, it has very naturally been asked, how is it that they become ignited? and how is it that in the extremely rare medium in which they move, they continue glowing, or indeed, burning with such brilliancy?—We now come to a description of the falling stars or asteroids, observed Nov. 12. 1838, by Mr. R. C. Woods, who stationed himself at Richmond, Surrey, for the purpose of observing that phenomenon: In the afternoon of the 12th, the sun sank below the horizon, so as to predicate a clear night, there being a rich profusion of red, orange, and rosy-coloured lines. From 12 o'clock (midnight, 12th) till 25 minutes past 3 on the 13th, nine meteors fell, crossing the Milky Way at angles of from 70 to 80 degrees; six were without trains, and three with trains. At 35 minutes past 3, nothing could exceed the beauty and grandeur of the heavens; from E.N.E. to N., meteors fell like a shower of bomb-shells in a bombardment, and in such rapid succession as to defy every attempt to watch their particular direction and course among the stars, or to ascertain their number. The whole visible heavens were illuminated by the light such a prodigious number of meteors diffused in their descent towards the earth, and a more beautiful and magnificent sight cannot possibly be conceived. At 55 minutes past 3 the 'shower' ceased, and after 4 o'clock all traces of meteors were gone; the stars however, shone without diminution in number or brightness, and the atmosphere was remarkably clear. ——We see by an article in the Vienna Official Gazette, that a similar observation was made in Germany at the same time by M. Karl Von Littrow, who says, "On the 11th of November, during five hours after six in the

IN FEUDAL TIMES SOME VASSALS WERE BOUND TO APPEAR ANNUALLY WITH A WELL-TRAINED FALCON AND A PROPER DOG.

FALCONRY IS INCONSISTENT WITH THE USAGES OF MODERN TIMES, AND INCONVENIENT FROM THE GENERAL CLOSURE OF FIELDS.

evening, the sky being clear, we counted about twenty falling stars in an hour, so that the phenomenon was increasing. On the 12th of November, the sky being quite cloudy, no observation of the kind could be made. On the 13th of November, the sky suddenly cleared up half an hour before midnight, and remained perfectly serene till day-break. During these six hours we noted 1002 falling stars, of which by far the greater part was of the first magnitude, with a long horn of light, and casting much shade, like the moon. The phenomenon decidedly increased from the beginning of the observation till about four in the morning, when it seemed to have reached its culminating point."——That this phenomenon has not decreased, is evident from the following account which appeared in the Paris journals during August, 1839: "Letters from various parts of France inform the Academy of Sciences that the phenomenon exhibited itself with more or less splendour on the nights of the 9th to the 11th of August. Everywhere the same direction from the north-east to the south-west has been remarked. At Paris, for instance, astronomers have ascertained that the average number of shooting stars which on other days scarcely exceed eight in an hour, amounts to twenty-five, thirty, forty, and even fifty in the same lapse of time. The height at which they are is considerable; calculations combined with observation carrying it sometimes to sixty leagues; as for their rapidity it is between eight and twenty-two leagues per second. Several of those fine meteors, after kindling in their fall, re-ascended as if they had been driven back by a fluid of a certain density."—— Though we have already, perhaps, given to this article undue space, considering our limits, there is something so graphic in the following account, which we copy from a newspaper dated Sept. 8, 1839, that we cannot resist the opportunity of giving it to our readers:—"Between the hours of ten on Tuesday night and three on Wednesday morning, in the heavens was observed one of the most magnificent specimens of those extraordinary phenomena the falling stars and northern lights ever witnessed for many years past. The first indication of the latter phenomenon was at about ten minutes before ten, when a light crimson, apparently vapour, rose from the northern portion of the hemisphere, and gradually extended to the centre of the heavens, and by ten o'clock, or a quarter past, the whole, from east to west, was one vast sheet of light. It had a most alarming appearance, and was exactly like that occasioned by a terrific fire. The light varied considerably; at one time it seemed to fall, and directly after rose with intense brightness. There were to be seen mingled with it volumes of smoke, which rolled over and over, and every beholder seemed convinced that it was "a tremendous conflagration." The consternation in the metropolis was very great, thousands of persons were running in the direction of the supposed awful catastrophe. The engines belonging to the Fire Brigade stations in Baker-street, Farringdon-street, Watling-street, Waterloo-road, and likewise those belonging to the West of England station—in fact, every fire-engine in London was horsed, and galloped after the supposed "scene of destruction," with more than ordinary energy, followed by carriages, horsemen, and vast mobs. Some of the engines proceeded as far as Highgate and Holloway before the error was discovered. These appearances lasted for upwards of two hours, and towards morning the spectacle became one of more grandeur. At two o'clock on Wednesday morning the phenomenon presented a most gorgeous scene, and one very difficult to describe. The whole of London was illuminated as light as noon day, and the atmosphere was remarkably clear. The southern hemisphere at the time mentioned, although unclouded, was very dark, but the stars, which were innumerable, shone beautifully. The opposite side of the heavens presented a singular, but magnificent contrast; it was clear to the extreme, and the light was very vivid; there was a continual succession of meteors, which varied in splendour. They apparently formed in the centre of the heavens, and spread till they seemed to burst; the effect was electrical, myriads of small stars shot out over the horizon, and darted with that swiftness towards the earth that the eye scarcely could follow the track; they seemed to burst also, and throw a dark crimson vapour over the entire hemisphere. The colours were the most magnificent that ever were seen. At half-past two o'clock the spectacle changed to darkness, which on dispersing, displayed a luminous rainbow in the zenith of the heavens and round the ridge of darkness that overhung the southern portion of the country. Soon afterwards columns of silvery light radiated from it; they increased wonderfully, intermingled amongst crimson vapour, which formed at the same time, and when at the full height the spectacle was beyond all imagination. Stars were darting about in all directions, and continued until four o'clock, when all died away. During the time that they lasted a great many persons assembled on the bridges across the river Thames, where they had a commanding view of the heavens, and watched the progress of the phenomenon attentively."

FALLING SICKNESS. [See Epilepsy.]

FALLO'PIAN TUBES, in anatomy, two canals or ducts arising in the womb of a tortuous figure, but approaching to a conic form, joined to the fundus, one on each side. They received their name from Gabriel Fallopius, a celebrated Italian anatomist and physician of the 16th century, who is said to have first ascertained their use and office in the process of conception.

FAL'LACY, a logical artifice, or an argument framed so as to deceive; a sophism.

FAL'LOW, a term applied to land which is left uncultivated for one or more years,

with a view to exterminate weeds, and to enable it to fix those atmospherical elements which promote vegetable growth, and which are exhausted by repeated crops of the same kind. As a succession of the same crops tends to impoverish the soil, a rotation of different crops is necessary. Potatoes and grain are exhausting; but after them, the soil is ameliorated by tares, turnips, &c.

FAL'LOW DEER, in zoology, the *Cervus dama* of Linnæus, having horns branched, recurved, and compressed. This animal usually forms one of the ornaments of English parks.

FALSE, contrary to the truth or fact: the word is applicable to any subject physical or moral.——*False*, in music, an epithet applied by theorists to certain chords, because they do not contain all the intervals appertaining to those chords in their perfect state. Those intonations of the voice which do not truly express the intended intervals are also called *false*, as well as all ill-adjusted combinations.——*False*, an epithet used also in law, as *false imprisonment*, the trespass of imprisoning a man without lawful cause.——In mineralogy, as *false diamond*, a diamond counterfeited with glass.——It is also a word much used in military affairs; as, a *false* alarm, a *false* attack, &c.——*False flower*, in botany, a flower which does not seem to produce any fruit.——*False roof*, in carpentry, that part of a house which is between the roof and the covering.

FALSETTO, in music, an Italian term, denoting that species of voice in a man, the compass of which lies above his natural voice, and is produced by artificial constraint.

FAMILIAR SPIRITS, demons, or evil spirits, supposed to be continually within call and at the service of their masters, sometimes under an assumed shape; sometimes compelled by magical skill, and sometimes doing voluntary service. In Eastern stories, nothing is more common than the mention of magic gems, rings, &c., to which are attached genii, sometimes good, sometimes bad; but in modern Christian Europe, the notion of *familiars* has always been restricted to evil spirits.

FAM'ILY, the collective body of persons who live in one house, under one head. Also the kindred or lineage of a person: thus the Israelites were a branch of the *family* of Abraham; and the descendants of Reuben, of Manasseh, &c. were called *families*.——*Family*, in natural history, any order of animals, or other natural production allied to each other by certain distinctive characteristics.——*Family of curves*, in mathematics, a congeries of several kinds of curves, all of which are defined by the same equation, but in a different manner, according to their different orders.

FANATIC, one who indulges wild and extravagant notions of religion, and sometimes exhibits strange motions and postures, and vehement vociferation in religious worship.——The ancients called those *fanatici* who passed their time in temples (*fana*), and being often seized with a kind of enthusiasm, as if inspired by the divinity, exhibited wild and antic gestures. Prudentius represents them as cutting and slashing their arms with knives: shaking the head was also common among the *fanatici*; hence the word was applied to different religious sects who, on their first appearance amongst us, sought notoriety by the extravagance of their actions and by pretending to inspiration.

FANDAN'GO, an old Spanish dance, which proceeds gradually from a slow and uniform to the most lively motion. It is seldom danced but at the theatre, and in the parties of the lower classes; nor is it even then customary to dance it with those voluptuous looks and attitudes which distinguish the true fandango. There is another species of fandango, called the *bolero*, the motions and steps of which are slow and sedate, but grow rather more lively towards the end. In these dances the time is beat by castanets.

FANFARE *(French)*, a short, lively, loud, and warlike piece of music, composed for trumpets and kettle-drums. Also, small, lively pieces, performed on hunting-horns, in the chase. From its meaning is derived *fanfaron*, a boaster, and *fanfaronade*, boasting.

FAN'-PALM, in botany, the *Corypha umbraculifera*, one of the most magnificent of trees, is a native of Ceylon, Malabar, and the East-Indies. It attains the height of 60 or 70 feet, with a straight, cylindrical trunk, crowned at the summit by a tuft of enormous leaves, which separate near the outer margin into numerous leaflets, and are usually 18 feet long, exclusive of the leaf-stalk, and 14 broad; a single one being sufficient to protect 15 or 20 men from the rain. When this palm (sometimes called the talipot-tree, or the great fan-palm) has reached the age of 35 or 40 years, it flowers—a long, conical, scaly spadix rising to the height of 30 feet from the midst of the crown of leaves, and separating into single alternate branches, which, at the base, extend laterally sometimes 20 feet, the whole covered with whitish flowers, and presenting a most beautiful appearance. The fruit is very abundant, globose, about an inch and a half in diameter, and requires 14 months to ripen, after which the tree soon perishes, flowering but once in the whole course of its existence. The Indians use the leaves for umbrellas, tents, or for covering their houses; the pith, after being pounded, is made into a kind of bread, which is of great use in times of scarcity.

FANTA'SIA, in music, the name generally given to a species of composition, supposed to be struck off in the heat of the imagination; and in which the composer is allowed to give free range to his ideas, unconfined by the rules of the science. Some limit the term to mere extemporaneous effusions, which are transitive and evanescent: differing from the *capricio* in this, that though the latter is wild, it is the re-

IN THE REIGN OF ELIZABETH, FANS WERE MADE OF OSTRICH FEATHERS, WITH CURIOUSLY-WROUGHT HANDLES OF GOLD, SILVER, OR IVORY.

"FAMILIARS" IN THE INQUISITION, WERE PERSONS WHO ASSISTED IN APPREHENDING THE ACCUSED, AND CONVEYING THEM TO PRISON.

THE FARINACEOUS PART OF SEEDS IS CONVERTED INTO SACCHARINE JUICE BY THE VEGETABLE POWER OF DIGESTION.

sult of premeditation, and becomes permanent; whereas the *fantasia* when finished, no longer exists.

FARCE, a dramatic piece or entertainment of low comic character. It was originally a droll, or petty shew exhibited by mountebanks and their buffoons in the open streets, to gather the people together. It has, however, long been removed from the street to the theatre; and instead of being performed by merry-andrews to amuse the rabble, is acted by comedians, and become the entertainment of a polite audience. As the aim of a farce is to promote mirth, the dialogue is not refined, nor is there any opportunity lost to excite laughter, however wild or extravagant the plot, or however ridiculous the characters.

FARE, money paid for the passage of a person in any vehicle, either by land or by water.

FARI'NA, in natural history, signifies literally meal or flour; but is also applied to the pulverulent and glutinous part of wheat, and other grain, before as well as after it has been ground.

FARI'NA FŒCUN'DANS, among botanists, the impregnating meal or dust on the apices or antheræ of flowers, which, being received into the pistil or seed-vessel of plants, fecundates the rudiments of the seeds in the ovary, which otherwise would decay and come to nothing. The manner of obtaining the farina of plants for microscopical observation is this: gather the flowers in the midst of a dry sun-shiny day, when the dew is perfectly off, then gently shake off the farina, or lightly brush it off with a soft hair-pencil, upon a piece of white paper; then take a single talc of isinglass between the nippers, and, breathing on it, apply it instantly to the farina, and the moisture of the breath will make that light powder stick to it. If too great a quantity is found adhering to the talc, blow a little of it off; and if there is too little, breathe upon it again, and take up more. When this is done, put the talc into the hole of a slider, and applying it to the microscope, see whether the little grains are laid as you desire, and if they are, cover them up with another talc, and fix the ring, but care must be taken that the talcs do not press upon the farina in such a manner as to alter the form.

FARM, a large portion of land, employed in the purposes of husbandry, and let on lease at a certain yearly rent. He who holds a farm and is a tenant or lessee thereof, is a *farmer*.——"*To farm*," in a general sense, is to hire at a fixed rent any post, situation, or property, from which larger but unfixed profits may be obtained; thus, one agreeing to pay a certain yearly sum, in consideration of receiving the tolls at a turnpike, is said *to farm* the turnpike.

FAR'RIERY, the art of preventing, or curing the diseases of horses. This is now called the *veterinary* art; and the smith whose business it is to shoe horses is denominated a farrier. Indeed, it is said by some, that they were originally called *ferriers*, from their working in iron, and that hence arose the word farrier, which, as they also undertook the management and cure of horses, designated their joint trade.

FAS'CES, in Roman antiquity, bundles of rods with an axe in the centre of each bundle carried before the consuls as a badge of their office. The use of the fasces was introduced by the elder Tarquin as a mark of sovereign authority: in after times they were borne before the consuls, but by turns only, each having his day. These latter had twelve of them, carried by so many lictors.

FAS'CIA, in architecture, any flat member having a considerable breadth and but a small projecture, as the band of an architrave, larmier, &c.——In anatomy, the name of any aponeurotic expansion of muscles which binds parts together.

FASCIA'LIS, in anatomy, an epithet for a muscle which moves the leg.

FASCIC'ULAR, in botany, an epithet for a root of the tuberous kind, with the knobs collected in bundles, as in Pœonia.

FASCIC'ULITE, in mineralogy, a variety of fibrous hornblend, of a fascicular structure.

FASCIC'ULUS, in medicine, denotes a handful, or according to some, as much as can be taken up between the finger and the thumb.——In botany, a species of inflorescence in which several upright approximating flowers are collected together.

FASCINA'TION, a kind of witchcraft or enchantment supposed to operate by the influence of the eye. A belief in fascination appears to have been very generally prevalent in most ages and countries. It has been till very recently, and in some remote districts is even yet, prevalent among the Scotch Highlanders, and the inhabitants of the Western islands, where the fear of the evil eye has led to various precautions against its influence; and in Turkey, when a child is born, it is immediately laid in the cradle and loaded with amulets, while the most absurd ceremonies are used to protect it from the noxious fascination of some invisible demon. Nay, the evil eye is there feared at all times, and supposed to affect persons of all ages, who, by their prosperity, may be the objects of envy.

FAS'CINES, in fortification, small branches, or bavins bound up in bundles, which are used in raising batteries, filling up the moat, binding the ramparts where the earth is bad, making parapets, &c.

FAS'CIOLA, in entomology, the Gourd Worm, or Fluke: a kind of flat worm often found in the intestines of animals.

FASHION-PIECES, in ships, the hindmost timbers which terminate the breadth, and form the shape of the stern.

FAS'SAITE, in mineralogy, a variety of augite, found in Fassa, in the Tyrol.

FASTI, in antiquity, the name of the Roman calendar, in which were set down all days of feasts, pleadings, games, ceremonies, the names of their officers, and other public concerns throughout the year.

FASTS, occasional abstinence from food, on days appointed by public authority to be

THE POWER OF FASCINATION (OR OF STUPIFYING BY TERROR) IS POSSESSED BY SERPENTS, &C. OVER ANIMALS DESTINED FOR THEIR PREY.

observed in fasting and humiliation. Solemn fasts have been observed in all ages and nations, especially in times of mourning and affliction. Among the Jews, besides their stated fast days, they were occasionally enjoined in the time of any public calamity. They were observed upon the second and fifth days of the week, beginning an hour before sunset, and continuing till midnight on the following day. On these occasions they always wore *sackcloth* next their skins, rent their clothes, which were of coarse white stuff; sprinkled ashes on their heads; went barefoot; and neither washed their hands nor anointed their bodies as usual. They thronged the temple, made long and mournful prayers, and had every external appearance of humiliation and dejection. In order to complete their abstinence, at night they were allowed to eat nothing but a little bread dipped in water, with some salt for seasoning, except they chose some bitter herbs and pulse. Our Saviour, by condemning some abuses committed in fasting, plainly intimates that it is a duty, though he does not enjoin it.

FAT, in anatomy, an oleaginous matter, secreted from the blood, and filling up the cavity of the adipose cells. Its uses are, 1. to serve as a kind of covering to the body, in order to defend it from cold and other injuries; 2. to defend the more tender and sensible parts from being too strongly vellicated by the salts; 3. to preserve in good order the flexion of the muscles, of the cutis, and of the other parts between and about which it is placed; 4. to facilitate the motions of some parts, as the eyes, jaws, &c.; 5. to fill up a number of empty interstitial spaces, and by that means to add greatly to the symmetry and beauty of the parts, as is evidently the case in the face, the neck, &c.; and 6. to prevent the painful pressure and attrition of the parts, particularly in the soles of the feet, &c., where the fat is copiously disposed, and serves in the place of a cushion for the muscular flesh to rest upon. There is also great reason to suppose, that when the body does not receive nourishment in the usual way, the regress of the fat into the veins supplies that defect.——*Fats* vary in consistence, colour, and smell, according to the animals from which they are obtained; thus, they are generally fluid in the cetaceous tribes, soft and rank-flavoured in the carnivorous, solid and nearly scentless in the ruminants, usually white and copious in well-fed young animals, yellowish and more scanty in the old. Their consistence varies also according to the organ of their production; being firmer under the skin, and in the neighbourhood of the kidneys, than among the movable viscera. The animal oils and fats combine with the alkalies, and form with these perfect soaps. With some of the earths, and metallic oxydes also, they form saponaceous compounds; and they even facilitate the oxydation of some of the metals, as copper and mercury, by the atmospheric air. Animal fat is not homogeneous, but consists of two substances, *stearine* and *elaine*, the former of which is solid, the latter liquid, at common temperatures, and on the different proportions of which its degree of consistence depends.

FA'TALISM, the belief of an unchangeable destiny, to which every thing is subject, uninfluenced by reason, and independent of a controlling cause; the doctrine, in short, which teaches that all things take place by an inevitable necessity.

FATA MORGA'NA, a singular aerial phenomenon seen in the straits of Messina. This atmospherical refraction is not, however, altogether confined to that locality, it having occasionally been seen on our own coasts. But we will describe it as it there appears: "When the rising sun shines from that point whence its incident ray forms an angle of about 45° on the sea of Reggio, and the bright surface of the water in the bay is not disturbed either by the wind or current, when the tide is at its height, and the waters are pressed up by currents to a great elevation in the middle of the channel, the spectator being placed on an eminence, with his back to the sun and his face to the sea, the mountains of Messina rising like a wall behind it, and forming the back-ground of the picture,—on a sudden there appears in the water, as in a catoptric theatre, various multiplied objects—numberless series of pilasters, arches, castles, well-delineated regular columns, lofty towers, superb palaces, with balconies and windows, extended alleys of trees, delightful plains, with herds and flocks, armies of men on foot, on horseback, and many other things, in their natural colours and proper actions, passing rapidly in succession along the surface of the sea, during the whole of the short period of time while the above-mentioned causes remain. All these objects, which are exhibited in the Fata Morgana, are proved by the accurate observations of the coast and town of Reggio, by P. Minasi, to be derived from objects on shore. If, in addition to the circumstances we before described, the atmosphere be highly impregnated with vapour, and dense exhalations, not previously dispersed by the action of the wind and waves, or rarified by the sun, it then happens, that in this vapour, as in a curtain extended along the channel to the height of above forty palms, and nearly down to the sea, the observer will behold the scene of the same objects not only reflected from the surface of the sea, but likewise in the air, though not so distinctly or well defined as the former objects of the sea. Lastly, if the air be slightly hazy and opaque, and at the same time dewy, and adapted to form the iris, then the above-mentioned objects will appear only at the surface of the sea, as in the first case; but all vividly coloured or fringed with red, green, blue, and other prismatic colours."

FATE, destiny depending on a superior cause and uncontrollable. According to the Stoics, every event is determined by Fate; and in the sense in which the mo-

derns use the word, it implies the order or determination of Providence.

FA'THER, in church history, is applied to ancient authors who have preserved in their writings the tradition of the church. Thus, St. Chrysostom, St. Basil, &c. are called Greek fathers, and St. Augustine and St. Ambrose Latin fathers. No author who wrote later than the 12th century is dignified with the title of *father*. It is also a title of honour given to prelates and dignitaries of the church, to the superiors of convents, to congregations of ecclesiastics, and to persons venerable for their age or quality. Thus, we say, "the right reverend *father* in God," "holy *father*," &c.——He who creates, invents, or composes anything; thus, God as creator is the *father* of all men; Jabal was the *father* of such as dwell in tents; Homer is considered as the *father* of epic poetry; a wise and affectionate king is called the *father* of his country, &c.——*Adoptive father*, he who adopts the children of another and acknowledges them as his own.——*Natural father*, the father of an illegitimate child.——*Putative father*, one who is only reputed to be the father.——*Father-in-law*, the father of one's husband or wife.——*Father-land*, the native land of of one's father or ancestors.

FATH'OM, a measure of six feet; used chiefly at sea in sounding the depth of water, measuring cordage, &c.

FAULTS, a term applied by miners to the fractures or interruptions in various strata.

FAUNA'LIA, three Roman festivals annually observed in honour of the god *Faunus*. The first was kept on the ides of February, the second on the 16th of the calends of March, and the third on the nones of December. The sacrifices on these occasions were lambs and kids. It is supposed that the Roman Faunus was the same with the Greek Pan.

FAUNS, rural deities, among the Romans, represented with horns on their heads, sharp pointed ears, and the rest of their bodies like goats. They were the mythological demi-gods of woods and forests, thence called *sylvan* deities.

FAUX JOUR, (French), *false light*; a term used in the fine-arts, signifying that a picture is placed so that the light falls upon it from a different side from that which the painter has represented the light in the picture as falling upon objects, or that it is covered with a bright glare, so that nothing can be properly distinguished.

FAVIS'SÆ, large vaults under ground in the area of the Roman capitol, where the Romans carefully lodged and deposited with a degree of religious care the old statues, and other sacred utensils, when they happened to be broken: such a superstitious veneration did they pay to every thing belonging to the capitol.

FAWN, a young deer; a buck or doe of the first year.

FE'ALTY, in feudal law, an oath taken on the admittance of any tenant to be true to the lord of whom he held his land. Under the feudal system of tenures, every vassal or tenant was bound to be true and faithful to his lord, and to defend him against his enemies: the tenant was called a liege man; the land a liege fee; and the superior, a liege lord.

FEASTS, or FESTIVALS, in a religious sense, are anniversary times of feasting and thanksgiving, such as Christmas, Easter, &c. Feasts were of divine institution; intended by the Deity to perpetuate among his chosen people, the Jews, the memory of his mercies and miracles; as well as to keep alive the friendship betwixt the different tribes and families, by bringing them together on solemn occasions, and offering up their thanksgivings in the holy city.—— Among Christians, *movable feasts* are those which, depending on astronomical calculations, do not always return on the same days of the year. Of these, the principal is Easter, which fixes all the rest, as Palm-Sunday, Good Friday, Ash-Wednesday, Sexagesima, Ascension-day, Pentecost, and Trinity Sunday. *Immovable feasts*, those which are constantly celebrated on the same day; of these, the principal are Christmas-day; or the Nativity, the Circumcision, Epiphany, Candlemas or the Purification, Lady-day or the Annunciation, All Saints, and All-Souls, and the days of the several apostles. —The four quarterly feasts, or stated times whereon rent on leases is usually reserved to be paid, are Lady-day, or the annunciation of the Virgin Mary, on the 25th of March; the nativity of St. John the Baptist, on the 24th of June; the feast of St. Michael the arch-angel, on the 29th of September; and Christmas, or rather of St. Thomas the apostle, on the 21st of December.——The *feasts of the ancients* were conducted with great ceremony. The guests wore white garments, decorated themselves with garlands, and often anointed the head, beard, and breast with fragrant oils. The banqueting room was also often adorned with garlands and roses, which were hung over the table, as the emblem of silence: hence the common phrase, to communicate a thing *sub rosa* (under the rose). The luxurious Romans drank out of crystal, amber, and the costly *murra* (a kind of porcelain introduced by Pompey), as well as onyx, beryl, and elegantly wrought gold, set with precious stones. After the meal was ended, flute players, female singers, dancers and buffoons of all kinds, amused the guests, or the guests themselves joined in various sports and games.

FEATH'ER, a general name for the covering of birds; it being common to all of them to have their whole body, or the greatest part of it, covered with feathers or plumage. Feathers consist of a tube, a shaft, and barbs or vanes. The *tube* is a hollow, transparent, horny cylinder, constituting the root of the feather; the shaft is elastic, and contains a white, dry, and very light pith; and the *barbs* run in a uniform direction, broad on one side, narrow on the other, covering each side of the shaft. The feathers of birds are periodically changed, which

is called *moulting*. When part of a feather is cut off, it does not grow out again; and a bird whose wings have been clipped, remains in that state till the next moulting season, when the old stumps are shed, and new feathers grow out.—When chemically analyzed, feathers seem to possess nearly the same properties with hair.—They may be considered as of four kinds: 1. quills, or the feathers of the wings; 2. those which cover the body; 3. the down which grows close to the skin; and 4. the long ones of the tail. Of the first description, the goose, the turkey, and the crow, supply those usually employed in writing. The down of the swan is sometimes made into muffs and other articles of dress. Goose feathers are most esteemed for beds, and they are best when plucked from the living bird, which is done thrice a-year, in the spring, midsummer, and beginning of harvest. The feathers of the eider-duck, called *eider-down*, possess in a superior degree all the good qualities of goose down, but it should only be used as a *covering* to beds, for by much pressure it loses its elasticity.——Feathers make a considerable article in commerce, particularly those of the ostrich, heron, swan, peacock, turkey, goose, and duck. They also afford a source of employment to the *plumassier*, or artisan who prepares them for the toilette, to ornament the heads of ladies, or to give a finishing stroke to the gay exterior of military men.—Ostrich feathers are imported from Algiers, Tunis, Alexandria, Madagascar, and Senegal.

FEB'RIFUGE, in medicine, an appellation given to such medicines as mitigate or remove a fever.

FEB'RUARY, in chronology, the second month of the year, reckoning from January, first added to the calendar of Romulus by Numa Pompilius. February derived its name from *Februa*, a feast held by the Romans in this month, in behalf of the *manes* of the deceased, at which ceremony sacrifices were performed, and the last offices were paid to the shades of the defunct. February in a common year consists only of 28 days, but in the bissextile year it has 29, on account of the intercalary day added that year.

FE'CIALES, a college of priests instituted at Rome by Numa, consisting of twenty persons, selected out of the best families. Their business was to be arbitrators of all matters relating to war and peace, and to be the guardians of the public faith.

FED'ERAL GOVERNMENT, such a government as consists of several independent provinces or states, united under one head; but the degree to which such states give up their individual rights may be very different, although as relates to general politics they have one common interest, and agree to be governed by one and the same principle. Of such kind is the government of the United States of America.

FEE, a reward or recompense for professional services; as the *fees* of lawyers, physicians, &c. Public offices have likewise their settled *fees*, for the several branches of business transacted in them.

FEE-ESTATE, in law, properly signifies an inheritable estate in land, held of some superior or lord; and in this sense it is distinguished from *allodium*, which is the absolute property in land. It is the *theory* of the English law that all the lands of the kingdom, except the royal domains, are held in fee, or by a tenure, of some superior lord, the absolute or allodial property being only in the king, so that all the tenures are strictly feudal. The most ample estate a person can have is that of *fee-simple*; and such an estate can be had only in property that is inheritable, and of a permanent nature.——*Fee-farm*, a kind of tenure without homage, fealty, or other service, except that mentioned in the feoffment; which is usually the full rent. The nature of this tenure is, that if the rent is in arrear or unpaid for two years, then the feoffer and his heirs may have an action for the recovery of his lands.

FEEL'ERS, a term generally applied to the *antennæ* of insects, which are vulgarly called horns; but, strictly, the feelers are distinguished from antennæ by being short, naked, and placed near the mouth. They are used in searching for food.

FEEL'ING, one of the five external senses, by which we obtain the ideas of solid, hard, soft, rough, hot, cold, wet, dry, and other tangible qualities. This sense is the coarsest, but at the same time it is the surest of the five: it is besides the most universal. We see and hear with small portions of our body; but we feel with all. Nature has bestowed that general sensation wherever there are nerves, and they are everywhere, where there is life. Were it otherwise, the parts divested of it might be destroyed without our knowledge. All the nervous solids, while animated by their fluids, have this general sensation; but the papillæ in the skin, those of the fingers in particular, have it in a more exquisite degree. Like every other sense, feeling is capable of the greatest improvement: thus we see that persons, born without arms, acquire the nicest feeling in their toes; and, in blind people, this sense becomes so much developed, that individuals born blind, and acquiring the faculty of sight in after life, for a long time depend rather on their feeling than on their sight, because they receive clearer ideas through the former sense.

FEINT, in military tactics, a mock attack, made to conceal the true one.

FE'LIS, in zoology, a genus of the order *feræ*. This tribe is temperate in its habits, climbs trees, sees best by night, and when falling from a height lights on the feet: waves the tail when in sight of prey, and refuses vegetable food except from necessity. It includes the lion, tiger, cat, panther, &c., which we accordingly call the *feline* race.

FEL'LOES, the pieces of wood which form the circumference or circular part of the wheel.

FEL'LOW, the member of a college or of a corporate body.——This word has a very wide and opposite meaning; for though we say, in speaking of a skilful artist, this man has not his *fellow*, we also apply it in the most ignoble sense, and say, such a one is a mean or worthless *fellow*.

FEL'LOWSHIP, in arithmetic, a rule by which the loss and gain of each particular person in a joint-stock concern is discovered.

FELO DE SE, in law, a person that, being of sound mind, and of the age of discretion, wilfully causes his own death. The goods and chattels of a *felo-de-se* are forfeited to the king: but the coroner's jury, summoned for the purpose of inquiring into the cause of death, &c., frequently save the forfeiture, by finding a verdict of lunacy; to which they are inclined on a favourable interpretation, that it is impossible for a person in his senses to do a thing so contrary to nature.

FEL'ONY, in law, includes generally all capital crimes below treason, such as murder, burglary, &c.; and is punished with death or transportation, according to the enormity of the offence.

FEL'SPAR, or FELD'SPAR, a mineral compound of silica, alumina, and potash; one of the constituents of granite, softer than quartz, harder than glass, and generally white, greyish, or reddish. The general figure of the numerous crystals of felspar is an oblique prism, with unequally produced planes, whose number varies from four to ten. These prisms are terminated by summits, ordinarily composed of two large culminating faces, and several smaller faces, which seem to obey no constant law of arrangement: hence it results, that the forms of felspar are among the most difficult of any to understand and describe. In its decomposed state, felspar furnishes the *petuntse*, or Cornish stone, so much used in the porcelain and best pottery manufactures.

FELT, a sort of coarse wool, fur, or hair, used in the making of hats. The method of working up the materials into a species of cloth, independently of either spinning or weaving, is called *felting*. These materials are intimately mixed together by the operation of *bowing*, which depends on the vibrations of an elastic string, the rapid alternations of its motion being peculiarly well adapted to remove all irregular knots and adhesions among the fibres, and to dispose them in a very light and uniform arrangement. This texture, when pressed under cloths and leather, readily unites into a mass of some firmness; and by various subsequent operations a hat is formed.

FELUC'CA, a light open vessel with six oars, much used in the Mediterranean. It has this peculiarity, that its helm may be used either at the head or the stern.

FE'MALE-FLOWER, in botany, a flower which is furnished with the pistil, or female organs.

FE'MALE SCREW, a screw, the spiral thread of which is cut in the cavity of the cylinder.

FEME COV'ERT, in law, a married woman, who is under covert of her husband. By the common law of England, the legal capacity of a woman to contract, or sue and be sued, separately, ceases on her marriage; and her husband becomes liable to her debts existing at that time.——*Feme sole*, a single woman.——*Feme-sole merchant*, a woman who carries on trade alone, or without her husband.

FEM'ININE, in grammar, denoting the female gender.

FEM'ORAL, belonging to the thigh; as, the *femoral* artery.

FEN, a place partially overflowed with water, abounding in bogs, and producing sedges, coarse grass, or other aquatic plants. The fens generally teem with wild ducks, teal, pike, eels, &c.

FEN'CING, the art of using skilfully a sword or foil either in attack or defence. In the exercise of this art, foils or thin swords are used, which, being blunted at the points, and bending readily, are rendered harmless.

FEN'-CRICKET, in entomology, *Gryllotalpa*, an insect that digs for itself a little hole in the gound.

FEN'DERS, a sea term for pieces of old cable, &c. hung over the sides of a ship to keep off other ships.

FENES'TRA, in anatomy, a term applied to two openings or *foramina* within the ear, distinguished by the names of the oval and the round fenestra.

FEN'NEL, in botany, a fragrant plant of the genus *Anethum*, cultivated in gardens.

FEODUM, FEOD, or FEUD, in feudal law, the right which the vassal had in land, &c. to use the same, and take the profits thereof, rendering unto his lord such fees, duties, and services, as belonged to military tenure.

FEOFF'MENT, in law, is a gift or grant of any manors, messuages, lands, or tenements to another in *fee*, that is, to him and his heirs for ever, by delivery of seisin, and possession of the estate granted. The giver is called the *feoffer*, and the person who is thus invested is called the *feoffee*.

FER'Æ, in zoology, the third order of animals in the Linnæan system, including such as have from six to ten conic fore teeth and one tusk; as the seal, the dog, the wolf, the hyæna, the jackal, the lynx, the tiger, the panther, &c.

FER'Æ NATUR'Æ, in law, are beasts and birds that are wild; as foxes, hares, wild-ducks, &c., in which no person can claim any property.

FERA'LIA, in antiquity, a festival observed among the Romans, on the 21st of February, or, according to Ovid, on the 17th, in honour of the *manes* of their deceased friends and relations. During the ceremony, which consisted in making presents at their graves, marriages were forbidden, and the temples of the divinities shut up; because they fancied that during this festival, departed spirits suffered no

BEFORE THE BLOWPIPE, UPON CHARCOAL, FELSPAR BECOMES GLASSY, SEMI-TRANSPARENT, AND WHITE, BUT MELTS WITH DIFFICULTY.

FENCING GIVES STRENGTH AND FLEXIBILITY TO THE LIMBS, QUICKNESS AND ACCURACY TO THE EYE, AND SELF-POSSESSION TO THE MIND.

pains in hell, but were permitted to wander about their graves, and feast upon the meats prepared for them.

FER DE FOURCHETTE, in heraldry, a cross having at each end a forked iron, like that formerly used by soldiers to rest their muskets on.

FERENTA'RIA, in ancient Rome, a sort of light-armed soldiers.

FE'RIA, in the Romish breviary, is applied to the several days of the week; thus Monday is the *feria secunda*, Tuesday the *feria tertia*, and so on.

FE'RIÆ, in Roman antiquity, holidays, or days upon which they abstained from business. The *feriæ* were of several kinds, namely, *Feriæ stative*, or stated festivals; *feriæ conceptive* or movable feasts; *feriæ imperative*, or occasional festivals enjoined by the consuls or other magistrates on some public occasion; and *feriæ denicales*, for private occasions. There were also the *feriæ Latinæ*, kept by the fifty Latin towns on Mount Albanus; and the *feriæ mundinæ*, festivals kept for nine days on the appearance of any prodigy.——It was a pollution of the *feriæ*, according to Macrobius, if the *rex sacrorum* or *flamines* saw any work done on them, and therefore they ordered proclamation to be made by the herald, that every one might abstain from work; and whoever transgressed the order was fined.

FE'RINE, an epithet for such beasts as are wild and savage, as lions, tigers, wolves, bears, &c.

FE'RIO, in logic, a mode in the first figure of syllogisms, consisting of a universal negative, a particular affirmative, and a particular negative.——A similar mode in the third figure of syllogisms, is termed *ferison*.

FERMENTA'TION, that change in the principles of organic bodies which begins to take place spontaneously as soon as their vital functions have ceased, and by them are at length reduced to their first principles. This has been distinguished into three stages, the *vinous*, *acetous*, and *putrefactive*. It is ascertained almost beyond doubt, that the vinous fermentation takes place only in such bodies as contain saccharine juices. In this the most remarkable product is a volatile, colourless, slight inflammable fluid, which mixes with water in all proportions, and is called alcohol. The acetous fermentation is distinguished by the product known by the name of vinegar, which is the least destructible of the vegetable acids. It does not appear, however, that fermentation is absolutely necessary for the production of this acid, as there are many other chemical processes by which it may be obtained or produced. The acetous fermentation is conducted on a large scale, for yielding the common vinegar of commerce. In France, it is prepared by exposing weak wines to the air during warm weather. In England, it is made from a solution of brown sugar, or molasses, or an infusion of malt. The vinegar thus obtained, however, always contains a large quantity of mucilaginous and other vegetable matters, the presence of which renders it liable to several ulterior changes. In the putrid fermentation, bodies appear to be reduced into their most simple parts. Ammonia is the product which has been remarked as the chief of this process, and is no doubt produced by the combination of the hydrogen and nitrogen gases, which are disengaged together. Fermentation differs from effervescence. The former is confined to animal and vegetable substances; the latter is applicable to mineral substances: the former is spontaneous; the latter, produced by the mixture of bodies.

FERN, a weed, very common in dry and barren places, which is very injurious to the land in which it has once taken root. Ferns are of the *cryptogamia* class, without flowers or apparent germs, similar to lichens, mushrooms, and mosses. Between the tropics, several species form small trees, having something of the aspect of palms, and are considered one of the greatest ornaments of those regions.

FERRA'RIA, in botany, a genus of plants, class 20 *Gynandria*, order 2 *Diandria*. The species are bulbous, and include the iris, narcissus, &c.

FER'RET, an animal of the genus *Mustela* or weasel tribe, of a pale yellow colour, with red eyes and a long snout; it is much used in catching rabbits and rats.

FER'RIC, pertaining to or extracted from iron.——*Ferric acid* is the acid of iron saturated with oxygen.

FERRI-CAL'CITE, in mineralogy, a species of calcareous earth or limestone combined with a large portion of iron.

FER'RILITE, in mineralogy, a variety of *trap*, containing iron in the state of oxyde.

FERRO-CY'ANATE, in chemistry, a salt formed by the union of ferro-cyanic acid with a salifiable base, as the *ferro-cyanate* of ammonia or potash.

FERRO-PRU'SSIATE, in chemistry, a compound of the ferro-prussic acid with a base.

FERRO-PRU'SSIC, or FERRO-CYAN'IC, in chemistry, terms designating a peculiar acid, formed of prussic acid and protoxyde of iron.

FERRO-SIL'ICATE, in chemistry, a compound of ferro-silicic acid with a base, forming a substance analogous to a salt.

FERRO-SILI'CIC, in chemistry, a term designating a compound of iron and silex.

FERRU'GINOUS, of the colour of rust or the oxyde of iron.

FER'RUM, a genus of minerals of the order of metals. [See IRON.]

FER'ULA, in ecclesiastical history, signifies a place separated from the church, wherein the *audientes* were kept, as not being allowed to enter the church.——Under the eastern empire, the *ferula* was the emperor's sceptre, as is seen on a variety of medals; it consisted of a long stem or shank, and a flat square head.——*Ferula*, or *Ferule*, an instrument of correction, in schools, with which boys are beaten on the palm of the hand.

LEAD IS USED BY WINE-MERCHANTS TO STOP THE ACETIC FERMENTATION OF WINE, AND TO RENDER WHITE WINES TRANSPARENT.

IN ALL VINOUS FERMENTATIONS, A DECOMPOSITION OF THE SACCHARINE MATTER TAKES PLACE, AND CARBONIC ACID IS PRODUCED.

FERU'LA, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*. The species are perennials, and consist of the different kinds of fennel.

FERULA'CEOUS, in botany, an epithet pertaining to reeds or canes; or to plants resembling the ferula.

FER'ULÆ, in surgery, splinters or chips of different matter, as of wood, bark, leather, paper, &c. applied to bones that have been disjointed, when they are set again.

FER'RY, the place or passage where boats pass over water to convey passengers.

FESCEN'NINE VERSES, in ancient Rome, were a sort of extemporary dialogue, in which the performers with a gross and rustic kind of raillery reproached each other, as well as their audience, with their vices and foibles. They received their name from Fescennia, a town in Tuscany, where this species of rude poetry was first used. Under cover of this practice much indecency prevailed; and the emperor Augustus therefore prohibited it, as tending to corrupt the public morals.

FESSE, in heraldry, one of the nine honourable ordinaries, consisting of a line or belt drawn directly across the shield, from side to side, and containing the third part of it. When figures are contained within the breadth of the fesse, it is said to be charged, or they are said to be *en fesse*.——*Fesse point*, the exact centre of the escutcheon.——*Fesse ways*, or *in fesse*, denotes any thing borne in the way of a *fesse*: that is, in a rank across the middle of the shield.——*Parte per fesse*, a parting across the middle of the shield, from side to side, through the *fesse point*.

FESTI'NO, in logic, a mood of syllogisms in the second figure, in which the first proposition is a universal negative, the second a particular affirmative, and the third a particular negative.

FES'TIVALS. [For the religious feasts of the Christians, and the feasts of the ancients, see FEASTS.] To which may be added,—that although it is impossible not to recognize in these festivals a Jewish, and, in part, also a pagan origin, it was, nevertheless, subsequently ordained by special ecclesiastical regulations, that they should not be celebrated in common with Jews, heathens, or heretics. In fact, to prevent these festivals from degenerating, and to preserve the distinction between them and the heathen customs, the Christian church implored the exercise of the civil powers for the preservation of the purity of the holidays and customs, and for the prohibition of all public amusements by which the sanctity of divine worship might be impaired. In this manner the Christian festivals united the serious and moral character of the Jewish with a certain freedom and cheerfulness, which they acquired from a system of paganism.

FESTOON', in architecture and sculpture, &c. an ornament representing flowers, fruits, and leaves, intermixed or twisted together; suspended at the ends, and falling down in the form of an arch.

FESTU'CA, in botany, a genus of plants, class 3 *Triandria*, order 2 *Digynia*. The species are perennials, and consist of the different kinds of fescue-grass.

FET'ICHISM, or FET'ICISM, the worship of idols among the negroes of Africa, among whom *fetich* is the name by which an idol is designated. They believe that the household or family *fetich* narrowly inspects the conduct of every individual in the house, and rewards or punishes each according to his deserts.

FET'LOCK, a tuft of hair that grows behind the pastern joint in the feet of many horses.

FEUD, an inveterate quarrel between families or parties in a state. The word is not applicable to wars between different nations, but to intestine wars and animosities between families, clans, or tribes.

FEU'DAL SYSTEM, a form of government anciently subsisting in Europe, and which, about twelve centuries ago, was so universally received, that Spelman calls it "the law of nations in our western world." It still forms the basis of modern customs, and therefore every Briton, who would understand the history of his country, the origin of its political constitution, the tenure of its landed property, and the general basis of its polity, should make himself acquainted with it. With respect to the origin of this system, we are told that it is to be found in the military policy of the Celtic or northern nations, known by the names of Goths, Vandals, Franks, Hunns, and Lombards, who overran Europe on the declension of the Roman Empire, and brought it with them from the countries out of which they emigrated. According to the feudal scheme, a victorious leader allotted considerable portions of land, called *feoda*, *fiefs*, or *feuds*, to his principal officers, who in their turn, divided their possessions among their inferiors; and the condition upon which these rewards were given, was that of faithful military service both at home and abroad. To this they engaged themselves by an oath of fealty; in the event of a breach of which, either by not performing the service agreed upon, or by deserting their lord in time of battle, &c., the lands were to return to their original possessor. Every person, therefore, who was a feudatory, *i. e.* who had received lands, was bound to do every thing in his power to defend the lord of his fee; while, on the other hand, the latter was no less subordinate to his immediate superior; and so on up to the prince himself. Thus the several orders of vassals formed a system of concentric circles, of which each was under the influence of the next, and all moved around a common centre, the king, as the supreme feudal lord. As there was a graduated scale from the lowest vassal to the prince or lord paramount of the territory, every man's interest was involved in the security of the whole; and every man was a pledge of security to his neighbour. In the midst of that disinterestedness of sentiment which belongs to a rude state of

THERE ARE THIRTY-FOUR RELIGIOUS AND FOUR CIVIL FESTIVALS OBSERVED BY THE ESTABLISHED CHURCH OF ENGLAND.

IN THE GERMAN EMPIRE, IF ANY ONE WAS NEITHER A LORD NOR A VASSAL, NO ONE TOOK CARE FOR HIS SAFETY.

society, the connection of the lord and his vassal was of the most admirable nature; and, as is the end of all social combinations, each individual contributed to support that strength by which he was protected. But besides these feudal grants, which were held only on the terms of military service above mentioned, there were others called *allodial*, which were given upon more enlarged principles. To these every free man had a title, and could not only claim his territory as well as the rest, but dispose of it at his pleasure. A part of their freedom consisted in liberty to go to the wars; for this, in the times to which we are referring, was the only way to acquire any degree of renown. Only the serfs or villeins, were destined to follow the arts of peace. The feudal vassals, properly so called, constituted the army; while the national militia was composed of the allodial proprietors. It has, however, often been argued, that the bare theory of feudal government, as a permanent institution, however fair-seeming, is hollow; that the family connexion it supposes could be but a source of minute, domestic tyranny; and that in their best period, the customs enumerated must have been liable to the grossest abuse. In process of time, the evil increased to an enormous height; and even the political value of the system decayed. In its vigour, it had at least constituted a regular, powerful, and compact system of government; a unanimity had pervaded the various departments of the state; and while the power was internally diffused, it presented to foreign nations a united and formidable front. As the ideas engendered by property advanced, and the great grew more avaricious of money than of glory; and when, it ought perhaps to be added, man's notions of right and order became more correct, nothing was heard of but the enormities of the powerful, and the sufferings of the humbler classes; and the strength of feudal governments declined amidst a spirit of disaffection too universal to be checked.——Mr. Hallam, in his work on the Middle Ages, ably exhibits a picture of the advantages and disadvantages of the feudal system: a portion of which we will here abridge. If, says he, we look at the feudal polity as a scheme of civil freedom, it bears a noble countenance. To the feudal law it is owing, that the very names of right and privilege were not swept away, as in Asia, by the desolating hand of power. The tyranny which, on every favourable moment, was breaking through all barriers, would have rioted without control, if, when the people were poor and disunited, the nobility had not been brave and free. So far as the sphere of feudality extended, it diffused the spirit of liberty, and the notions of private right. The bulk of the people, it is true, were degraded by servitude; but this had no connexion with the feudal tenures. As a school of moral discipline, the feudal institutions were perhaps most to be valued. Society had sunk, for several centuries after the dissolution of the Roman empire, into a condition of utter depravity; where, if any vices could be selected as more eminently characteristic than others, they were falsehood, treachery, and ingratitude. In slowly purging off the lees of this extreme corruption, the feudal spirit exerted its ameliorating influence. Violation of faith stood first in the catalogue of crimes, most repugnant to the very essence of a feudal tenure, most severely and promptly avenged, most branded by general infamy. The feudal law-books breathe throughout a spirit of mutual obligation. The feudal course of jurisdiction promoted, what trial by peers is peculiarly calculated to promote, a keener feeling and readier perception of moral as well as of legal distinctions. And as the judgment and sympathy of mankind are seldom mistaken in these great points of veracity and justice, except through the temporary success of crimes, or the want of a definite standard of right, they gradually recovered themselves, when law precluded the one and supplied the other. In the reciprocal services of lord and vassal, there was ample scope for every magnanimous and disinterested energy. The heart of man, when placed in circumstances which have a tendency to excite them, will seldom be deficient in such sentiments. No occasions could be more favourable, than the protection of a faithful supporter, or the defence of a beneficent suzerain, against such powerful aggression, as left little prospect except of sharing in his ruin. From these feelings, engendered from the feudal relation, has sprung up the peculiar sentiment of personal reverence and attachment towards a sovereign, which we denominate loyalty; alike distinguishable from the stupid devotion of eastern slaves, and from the abstract respect with which free citizens regard their chief magistrate. Men who had been used to swear fealty, to profess subjection, to follow, at home and in the field, a feudal superior and his family, easily transferred the same allegiance to the monarch. It was a very powerful feeling which could make the bravest men put up with slights and ill-treatment at the hands of their sovereign; or call forth all the energies of disinterested exertion for one whom they never saw, or in whose character there was nothing to esteem. In ages when the rights of the community were unfelt, this sentiment was one great preservative of society; and though collateral or even subservient to more enlarged principles, it is still indispensable to the tranquillity and permanence of every monarchy. In a moral view, loyalty has scarcely perhaps less tendency to refine and elevate the heart than patriotism itself; and holds a middle place in the scale of human motives, as they ascend from the grosser inducements of self-interest, to the furtherance of general happiness, and conformity to the purposes of Infinite Wisdom.

FEVER, in medicine, a disease characterized by an increase of heat, an accele-

rated pulse, great thirst, and an impaired state of several functions. The varieties are numerous; but the grand division is into *remitting* fevers, which subside or abate at intervals; *intermitting* fevers, which intermit or entirely cease at intervals; and *continued* fevers, which neither remit nor intermit.

FEUIL'LANS, an order of bare-footed monks, who observe the same rules with the Benardines.

FI'AT, in law, a short order or warrant signed by a judge, for making out and allowing certain processes.——*Fiat justitia* are the words written by the king on his warrant to bring a writ of error in parliament, &c.

FIB'RINE, in chemistry, a peculiar organic compound, found both in animals and vegetables. It is a soft solid, of a greasy appearance, insoluble in water, which softens in the air, becoming viscid, brown, and semi-transparent. It exists in chyle; it enters into the composition of blood; and it forms the chief part of muscular flesh. As the basis of flesh it is a very nutritious substance, and is essential to the sustenance of carnivorous animals.

FI'BRE, in anatomy, a simple filament, serving to form other parts. Some are hard and elastic; others are soft and flexible; some are so small as scarcely to be visible; while others are larger and appear to be composed of still smaller fibres. They constitute the substance of the bones, cartilages, muscles, nerves, veins, &c.——*Fibre* is also used to denote the slender filaments which compose other bodies, whether animal, vegetable, or mineral; but more especially, the capillary roots of plants.

FIB'ROLITE, a mineral that occurs with corundum, of a white or gray colour, composed of minute fibres.

FIBRIL'LA, in botany, the branch or division of a radical fibre.——In anatomy, *fibrillæ* are small fibres.

FIB'ULA, in anatomy, the outer and smaller bone of the leg. It is nearly of a triangular figure, and stands parallel to, but distant from the *tibia*.

FIC'TION, in law, a supposition that a thing is true without enquiring whether it is or not, so that it may have the effect of truth, as far as is consistent with equity.

FIEF, a fee; an estate held of a superior on condition of military service. [See FEUDAL SYSTEM.]

FIELD, in heraldry, the whole surface of the shield or escutcheon.——*Field*, in military tactics, the ground chosen for any battle.——*Field*, in painting, the ground or blank space on which anything may be drawn.

FIELD-MAR'SHAL, the highest military officer in England.——*Field-officer*, a military officer above the rank of a captain, as a major or colonel.——*Field-colours*, in war, are small flags of about a foot and a half square, which are carried along with the quarter-master general, for marking out the ground for the squadrons and battalions.——*Field pieces*, small cannons, from three to twelve pounders, carried along with an army in the field.——*Field-staff*, a weapon carried by the gunners, about the length of a halbert, with a spear at the end; having on each side ears screwed on, like the cock of a match-lock, where the gunners screw in lighted matches, when they are upon command.——*Field-works*, in fortification, are those thrown up by an army in besieging a fortress, or by the besieged to defend the place.

FIE'LD-DUCK, a species of bustard, nearly as large as a pheasant.

FIE'LDFARE, a migratory bird, of the genus *Turdus* or thrush. They pass the summer in the northern parts of Europe, but visit Great Britain in winter.

FI'CUS, in botany, a genus of plants, class 23 *Polygamia*, order 3 *Trioecia*. The species are shrubs or trees, the *Ficus carica*, *Caprificus*, *Ficus Indica*, &c.

FI'ERI FA'CIAS, in law, a judicial writ commanding the sheriff to levy the debt or damages on the goods of one against whom judgment has been had in an action of debt.

FIFTEE'NTH, an ancient tribute or tax laid upon cities, boroughs, &c. through all England, and so termed because it amounted to a fifteenth part of what each city or town had been valued at; or it was a fifteenth of every man's personal estate according to a reasonable valuation. In doomsday-book, there are certain rates mentioned for levying this tribute yearly.

FIG, the fruit of the fig-tree (*ficus carica*). Figs are produced abundantly in Turkey, Greece, Italy, Spain, France, and northern Africa. They are of an oblong shape, and of a dark purple or brownish colour, with a pulp of a sweet taste. When ripe, they are generally dried in ovens to preserve them, and then packed very closely in the small chests and baskets in which we import them. Dried figs, with barley bread, are now the ordinary food of the lower classes in Greece and the Archipelago.

FIG'URAL, or FIG'URATE NUMBERS, are such as do or may represent some geometrical figure in relation to which they are always considered, as *triangular* numbers, *pentagonal* numbers, *pyramidal* numbers, &c.

FIG'URATIVE, a term applied to whatever is expressed by obscure resemblances; as the types and mysteries of the Mosaic law; and also to any expression which is not taken in its primary and literal sense.

FIG'URE, in physics, denotes the surface or terminating extremities of any body; and, considered as a property of body affecting our senses, is defined, a quality which may be perceived by two of the outward senses—touch and sight.——*Figure*, in geometry, the superficies included between two or more lines; and is denominated either *rectilinear*, *curvilinear*, or *mixed*, according as the extremities are bounded by right lines, curve lines, or both. In the higher geometry, the term is applied to three mechanical curves, called the figure of the *secants*, figure of the *sines*,

and figure of the *tangents*.——*Figure*, in fortification, is the plan of any fortified place, or the interior polygon, which, when the sides and angles are equal, is called a *regular*, and when unequal, an *irregular* figure.——*Figure*, in astrology, signifies a description of the disposition of the heavens at a certain hour, in which the places of the planets and stars are marked in a *figure* of twelve triangles, called houses. ——*Figure*, in dancing, denotes the several steps which the dancer makes in order and cadence, considered as they mark certain *figures* on the floor.——*Figure*, in rhetoric, a mode of speaking or writing in which words are deflected from their ordinary signification, thereby expressing a passion with more emphasis and beauty than by the ordinary way. Rhetorical figures are often highly serviceable as well as ornamental, and serve to awaken and fix attention; but they are to be used with prudence and caution; for whatever is described in a multitude of words, or is carried on to a disproportionate length, fails of the end proposed, and grows tiresome rather than pleasing. The principal figures of rhetoric are the metaphor, allegory, simile, and personification; which, with their further divisions into hyperbole, climax, antithesis, &c., will be found under their respective heads.——*Figure*, in painting and designing, denotes the lines and colours which form the representation of any animal, but more particularly, of a human personage. Thus a painting is said to be full of figures, when there are many representations of men; and a landscape is said to be without figures, when there is nothing but natural scenery.——*Figures*, in arithmetic, are certain characters whereby we denote any number which may be expressed by any combination of the nine digits, &c.

FIL'ACER, an officer of the common-pleas, so called from his filing the writs on which he makes out processes. There are fourteen of these officers, who are severally allotted to particular divisions and counties, and make out all original processes, real, personal and mixed.

FIL'AMENT, in botany, the thread-like part of the stamen, which supports the anther.

FILA'RIA, in entomology, a genus of the class *Vermes*, and order *Intestina*: the most destructive is the *Filaria-medinensis*, or Guinea-worm; which inhabits both Indies, and is frequent in the morning-dew, whence it enters the naked feet of the slaves, and creates the most troublesome itching, accompanied with inflammation and fever. It is frequently from eight to ten feet in length, and not larger than a horse-hair.

FILE, in mechanics, an instrument used in smoothing and polishing metals, formed of iron or steel, and cut in little furrows. Files are called by different names, according to their various degrees of fineness; and are also distinguished from their shape, as flat, half-round, three-square, four-square and round.

FILI'CES, in botany, an order of plants of the class *Cryptogamia* in the Linnæan system, including the fern, horse-tail, adder's tongue, maiden-hair, spleenwort, &c.

FIL'IFORM, in botany, having the form of a thread or filament; as a filiform style or peduncle.

FIL'LAGREE-WORK, or FILIGRANE, a delicate and elaborate manufacture, primarily executed in threads of gold and silver, but lately imitated with coloured and gilt paper. In Sumatra, manufactures of fillagree-work are carried to very great perfection. In China also, where the fillagree is mostly of silver, many beautiful articles are produced.

FIL'LET, in architecture, a little square member, ornament, or moulding, used in various places, but generally as a corona over a great moulding.——Among painters and gilders, a little rule or line of leaf-gold, drawn over certain mouldings, or on the edges of frames, panels, &c.——In heraldry, a kind of narrow bordure, which runs quite round near the edge.

FIL'LIBEG, a dress reaching only to the knees, worn in the highlands of Scotland.

FIL'LY, a term among horse-dealers, to denote the female or mare foal.

FILM, a thin skin or pellicle, as on the eye. In plants, it denotes that thin woody skin which separates the seeds in pods.

FILTRATION, the process by which a liquid is freed from solid bodies mixed with it, or from any impurities which it holds in solution, by passing it through a linen or woollen bag, or filtering paper. Various other contrivances have also been invented for purifying muddy, corrupt, and putrid water, and rendering it fit for drinking; such as a porous kind of stone, sand, charcoal, &c.; and many patents have been obtained for filtering machines, some of which are excellent. In the "Proceedings of the British Association," the following *simple water filter* is recommended by Mr. J. T. Hawkins, which as it is effectual, and neither expensive nor troublesome, is worth knowing. The material is charcoal, which must be perfectly well burnt, and kept from exposure to the atmosphere; a test of good charcoal is that, when pulverized, it sinks rapidly in water. The charcoal must be supported on an indestructible material, as a plate of burnt clay, perforated with holes. The filter may consist of a common garden-pot, or similar vessel, with holes at the bottom. The lower part may be filled with round pebbles, then some smaller pebbles, then some coarse sand, and, finally, a stratum of pounded charcoal, of about three or four inches in thickness. It is a great mistake to put any material as sand, above the charcoal, with the view of arresting the grosser particles of impurity, as the sand will quickly stop up and be impervious to water. A filter prepared as above directed, will render water perfectly clean and sweet for many years.——In the filtering establishments at Paris, there are a great number of small boxes, lined with lead, which are open at top, and contain at bottom a bed of charcoal between two layers of sand.

IT IS OFTEN DESIRABLE SO TO CONSTRUCT THE FILTERING APPARATUS, THAT THE LIQUID SHOULD ASCEND BY HYDROSTATIC PRESSURE.

THE ITALIANS, WHO FIRST INTRODUCED FILLAGREE-WORK, PLACED SMALL BEADS UPON IT, AND GAVE TO IT THE NAME OF "FILAGRANA."

When the waters of the Seine and Marne arrive at Paris, very highly charged with salt, and undergo depuration in those boxes, it is found necessary to renew the upper strata every day, if not twice a-day. But lately, a most important improvement in filtration has been invented by Mons. de Fonveille, which is, to close the little filtering boxes hermetically, and to cause the water to pass through the filtering mass, not by its own weight merely, or by a simple charge but by high pressure. This mode is now practised at the Hotel Dieu, and it is asserted that 24 gallons of clarified water are thus produced in one minute. In cleaning the hermetically closed filters of the Hotel Dieu, the workmen, whose business it is, open suddenly and almost simultaneously, the cocks of the tubes which connect the bottom and top of the apparatus with the elevated reservoirs, or with the body of the feeding pump. The filter is thus tumultuously agitated by two cross currents, which have the effect of detaching from the filtrating gravel, the foreign matters which would otherwise remain adhering to it.

FIL'TRUM, in mineralogy, a Mexican stone, known also by the name of the filtering stone, of which it has the properties.

FIM'BRIÆ, appendages disposed by way of fringe round the border of anything. Hence *fimbriate* is a term used in botany for fringed, or surrounded by bristles; and *fimbriated*, in heraldry, is an epithet for an ordinary with a narrow bordure or hem of another tincture.

FIN, in natural history, a well known part of fishes, consisting of a membrane supported by rays, or little bony or cartilaginous ossicles; their use being to propel them rapidly through the water. Fishes, in general, possess five kinds of fins: 1st, the *dorsal*, or those of the back, varying in number from one to four; 2. the *pectoral*, or breast fins, which are inserted immediately below the gills; 3. the *ventral*, or abdominal fins, which are placed under the throat or belly, and point backwards; 4. the *anal* fins, situated under the tail; and, 5. the *caudal*, or tail fin, serving as the rudder by which the fish steers itself. Articulating with points of the internal skeleton or frame work, the fins possess great power. The muscles which move them are very strong, and, by a peculiar arrangement, they are enabled to erect the spines immovably at will, which is observed when fishes are taken by the hook. In colour and size, the fins of fish present the greatest variety, affording excellent characters for distinguishing the species.

FI'NAL CAUSES, the purposes or ultimate ends in view. The *efficient* cause is that which produces the event or effect; the *final* cause is that for which anything is done.

FINA'LE, the concluding part of a musical composition. In instrumental pieces, it has mostly a character of vivacity, and requires a quick movement and lively performance.

FINAN'CES, in political economy, denote the revenue of a king or state, or in other words, the money raised by loans, taxes, &c., for the public service. The English system of finance rests on the produce of the various taxes which have been imposed at different periods, the aggregate amount of which, after deducting the expenses of collection, together with a few small articles which cannot properly be called taxes, forms the whole of the public income: this income is annually appropriated to the several branches of the national expenditure, and when, in consequence of any extraordinary expences, it is known that the income of the current year will be insufficient to meet all the demands upon it, it is usual to borrow the sum necessary to make up the deficiency, either from individuals or public bodies, and to allow a fixed rate of interest on the money thus obtained, till the principal shall be repaid, or till the period originally agreed upon shall have expired.——A person employed in the economical management and application of the public money is called a *financier*.

FINCH, in ornithology, a numerous class of birds, forming the genus *Fringilla* of Linnæus; of which the most celebrated are the goldfinch, canary, and linnet.

FINE, in law, a penalty or amends made in money for an offence; also money paid for the renewal of a lease, and a conveyance of lands or tenements in order to cut off all controversies.

FINE ARTS, a term somewhat indefinite in its meaning, but generally applied to those arts which depend on the mind and imagination; opposed to the mechanical.

FI'NERY, the furnace in which metals are refined, that is, hammered and fashioned into what is called a blossom, or square bar.

FIN'GERS, in anatomy, the extreme part of the hand divided into five members, usually called the four fingers and the thumb. The names of the fingers, reckoning from the thumb, are,—1, *pollex*; 2, *index*; 3, *medius*; 4, *annularis*; 5, *auricularis*. In each of these there are three bones, which make three phalanges, the upper of which are much larger than the lower. Their exterior surface is convex, and their interior plane, but somewhat hollowed, for the convenience of grasping.

FIN'GERING, in music, the act of disposing of the fingers in a convenient, natural, and apt manner, in the performance of any instrument, but more especially the organ and piano-forte. Good fingering is one of the first things to which a judicious master attends; for to a facility in this branch of the performer's art must a pupil look, as the means of acquiring a facile and graceful execution, and the power of giving passages with articulation, accent, and expression.

FI'NITE, in mathematics, an epithet for a series, line, &c., which is bounded or limited, in extent, duration, &c., in distinction from *infinite*.

FINNO'CHIA, or SWEET-FENNEL, in botany, a species of fennel, cultivated in gardens as a salad herb.

FIN'TO, in music, a feint or an attempt to do something and not to do it; as *cadenza finto*, when having done every thing proper for a true character, instead of falling on the right final, a higher or a lower note is taken.

FIR'-TREE, the name of several species of the genus *Pinus*; as the Scotch fir, the silver fir, spruce fir, &c. [See PINE.]

FIRE. In former times, fire obtained a place among the elements, and was for a long time considered to be a constituent part in the composition of all bodies, and to require only the concurrence of favourable circumstances to develope its activity. Its all-consuming energy, the similarity of its effects to those of the sun, its intimate connexion with light, its terrible and yet beneficent power,—easily explain how it happened that, in times when cause and effect, form and essence, were not yet distinctly separated, fire became an object of religious veneration, a distinguished element in mythology, an expressive symbol in poetry, and an important agent in the systems of cosmogony. When natural philosophy was treated in the schools, theories were adopted to which little attention is paid in the present age, when all science is founded on facts and observations. Caloric, be it a material agent or the consequence of vibratory motion, is at present considered the cause of the phenomena which were formerly ascribed to fire; and though its nature is as unknown to us as that of fire was to the ancients, the substitution of one of these terms for the other has introduced a greater precision of language, and cause and effect are no longer confounded under the same name.——*Effects and properties of Fire.* From repeated experiments we learn, 1. that, in general, both solids and fluids manifest an expansive motion upon being heated; 2. that the direct inflammable matter of fuel, is oil, or an unctuous substance; 3. that no fuel will burn or consume, without the admission of fresh air; 4. that the air which has once passed through burning fuel is, of itself, unfit to animate fire again; 5. that flame exists only on the surface of fuel. It appears to be a property belonging to fire, that its parts endeavour equally to diffuse themselves; that is, by moving every way, and consequently tend neither more nor less to one point than another. If fire be collected in any body so as to be perceivable by our senses, it removes itself out of the same by its own power, and expands every way from the centre of its space or body. The parts of some bodies are extremely volatile, and will be dissipated by the action of fire; others are to be found whose parts are of such a nature, as not to yield to the force of fire, or the velocity communicated to them will not be able to dissolve the corpuscular attraction; but when this glowing velocity of the parts is abated, or, in other words, when the fire in the body is extinct, the parts, and, of course, the whole body, appear unaltered: of which we have striking instances in the asbestos and amianthus. ——Speaking of the mechanical origin of heat and cold, Mr. Boyle says, "In the production of heat, there appears nothing on the part either of the agent or patient, but motion and its natural effects. When a smith briskly hammers a small piece of iron, the metal thereby becomes exceedingly hot; yet there is nothing to make it so, except the forcible motion of the hammer impressing a vehement and variously determined agitation of the small parts of the iron, which, being a cold body before, grows, by that super-induced commotion of its small parts, hot: first, in a more loose acceptation of the word, with regard to some other bodies, compared with which it was cold before: then, sensibly hot; because this agitation surpasses that of the points of our fingers; that in this instance oftentimes the hammer and anvil continue cold, after the operation; which shews that the heat acquired by the iron was not communicated by either of those implements, as heat; but produced in it by a motion, great enough strongly to agitate the parts of so small a body as the piece of iron, without being able to have the like effect upon so much greater masses of metal as the hammer and the anvil. Though if the percussions were often and briskly renewed, and the hammer were small, this also might be heated; whence it is not necessary, that a body itself be hot to give heat." Fire is contained in the largest quantity in air: and the pure part of it, that is, *oxygen*, being disposed to unite with many other matters, most of the ordinary processes of combustion and inflammation are the result of the sudden union of oxygen with some other substance, in which case the fire that was contained in the oxygen of the air is disengaged and let loose. [See COMBUSTION.]—— *Subterranean fires.* The warm springs, the existence of extinct volcanoes, the effects of those still in activity, and the fact that the temperature of the earth becomes warmer the deeper we descend, have induced many philosophers to adopt the idea of subterranean fires, or of a central fire. According to the former hypothesis, there are combustible materials, in a state of ignition, in the bowels of the earth, which produce the heat indispensable for the production of the above-mentioned phenomena. The latter hypothesis supposes that the globe was once in a state of igneous fusion, that the surface has gradually become solid by cooling, and that the interior of the earth is still liquid and hot, and may remain so for ever, if the heat received from the sun is equal to that which it lost by radiation. [See EARTH, VOLCANO, &c.]

FIRE-ARMS, a general designation for all sorts of guns, fowling pieces, blunderbusses, pistols, &c., which effect their discharge by the combustion of gunpowder.

A FIRE BURNS BRISKLY IN COLD WEATHER, BECAUSE, AS THE AIR IS DENSE, IT AFFORDS MORE NOURISHMENT TO THE FIRE.

WHEN A FIRE IS EXTINGUISHED BY THE RAYS OF THE SUN, IT IS BECAUSE THEY ENGAGE THE OXYGEN WHICH BEFORE FED IT.

The manufacture of these weapons in England is very extensive; and in order to prevent the numerous accidents which would otherwise occur from the bursting of ill-constructed barrels, the act 55 Geo. III. c. 59. imposes a fine of 20*l.* on any person using, in any of the progressive stages of its manufacture, any barrel not duly proved; on any person delivering the same, except through a proof-house; and on any person receiving, for the purpose of making guns, &c., any barrels which have not passed through a proof-house.

FI'RE-BALLS, in military operations, balls which are capable of being ignited and burned: such, for instance, as are thrown by night from mortars or howitzers towards quarters which it is desirable to examine.——In natural philosophy, globular masses of fire, of different magnitudes, occasionally seen moving through the atmosphere with greater or less velocity. With regard to the nature of these phenomena there are various conjectures. [See FALLING STARS, METEORS, &c.]

FI'RE-DAMP. [See DAMPS.]

FI'RE-DRESS, an invention of the chevalier Aldini, consisting of an exterior light armour of metallic gauze, (which fabric was discovered by Sir Humphry Davy to be impervious to flame), and of an inner covering of a material which is a slow conductor of heat. Among flexible fibrous substances capable of being spun and woven into tissues, the asbestos possesses pre-eminently the property of slowly conducting heat: but woollen, cotton, &c., by immersion in certain saline solutions, may serve to prevent the transmission of injurious heat to the body, during a temporary exposure of some minutes to the action of flame on the outward covering of wire gauze.

FI'RE-ENGINE, an engine for extinguishing fire, which consists of two forcing pumps so combined that their joint action produces a constant and powerful stream of water, which, by means of a pipe, may be directed at pleasure to any point. The handles are so disposed, that, while the piston of one pump is up, that of the other is down; and they are elongated for the purpose of enabling a great number of men to work them at the same time.——By an ingenious application of steam power to the working of fire-engines, Mr. Braithwaite has added greatly to their usefulness. As soon as an alarm is given, the fire is kindled, and the bellows attached to the engine are worked by hand. By the time the horses are harnessed in, the fuel is thoroughly ignited, and the bellows are then worked by the motion of the wheels of the engine; so that generally by the time it reaches the fire the steam is ready. This engine will deliver about 9000 gallons an hour to a height of 90 feet, through an adjutage of 7-8ths of an inch; and the expense of fuel is stated to be only sixpence an hour.

FI'RE-FLY, a small kind of beetle, common in America, which emits a beautiful phosphoric light from the under surface of the terminal segments of the abdomen. The phosphoric light produced by these insects is of a greenish yellow, and proceeds from a collection of yellowish matter under the tail, which is kindled or extinguished at pleasure, and which nature seems to have provided, as in the case of the glow-worm, in order to direct the sexes to each other.

FI'RE-SHIP, a vessel filled with combustibles, and fitted with grappling-irons, which, with the advantage of a favourable wind, hook on to the enemy's vessels, and set them on fire.

FI'RE-WORKS, compositions of sulphur, saltpetre, charcoal, and other ingredients; formed in a variety of ways, and which exhibit a handsome appearance when exploded. [See PYROTECHNY.]

FIRE (GREEK), a destructive composition, used in war from the 7th to the 13th century. When the Arabs besieged Constantinople in 668, the Greek architect Callinicus of Heliopolis, deserted from the caliph to the Greeks, and took with him a composition, which, by its wonderful effects, struck terror into the enemy, and forced them to take to flight. Sometimes it was wrapped in flax attached to arrows and javelins, and so thrown into the fortifications and other buildings of the enemy, to set them on fire. At other times it was used in throwing stone balls from iron or metallic tubes against the enemy. The receipt for the composition of the *Greek fire* was long supposed to be lost; but the baron Von Aretin of Munich has, it is said, discovered in a Latin MS. of the 13th century, in the central library in that city, a dissertation on the Greek fire, which contains the receipt.

FI'RE-BOTE, in our old customs, is fuel or firing for necessary use, allowed to tenants, out of the lands granted to them.

FIR'MAMENT, in Scripture, denotes the great arch or expanse over our heads, in which are placed the atmosphere and the clouds, and in which the stars *appear* to be placed, and are *really* seen.——In the Ptolemaic astronomy, the firmament is the eighth heaven or sphere, with respect to the seven spheres of the planets which it surrounds. It is supposed to have two motions; a diurnal motion, given to it by the *primum mobile*, from east to west about the poles of the ecliptic; and another opposite motion from west to east, which last it finishes, according to Tycho, in 25,412 years; according to Ptolemy, in 36,000; and according to Copernicus, in 25,800; in which time the fixed stars return to the same points in which they were at the beginning. This period is commonly called the Platonic, or great year.

FI'RING-IRON, in farriery, an instrument not unlike the blade of a knife; which, being made red-hot, is applied to a horse's hams, or other places, such as preternatural swellings, farcy knots, &c. in order to discuss them.

FIR'KIN, an English measure of capacity, containing nine gallons of beer.

FIRMAN, a passport or licence granted in Turkey and India for the liberty of trade.

FIRST-FRUITS, offerings made to God by the Hebrews, of part of the fruit of their harvest, as an acknowledgment of his sovereign dominion. They were called first-fruits because they were offered in the temple before any part of the crop was touched. ——*First-fruits*, in the church of England, are the profits of every spiritual benefice for the first year, according to the valuation in the king's books.

FISC, or FIS'CUS, the treasury of a prince, or state. It differs from the *ærarium*, which was the treasury of the public, or people: thus, when the money arising from the sale of condemned persons' goods was appropriated for the use of the public, their goods were said to be *publicari;* but when it was destined for the support of the prince, they were called *confiscari.*

FIS'CAL, in the civil law, something relating to the pecuniary interest of the prince or people. The officers appointed for the management of the fisc, were called *procuratores fisci*, and *advocati fisci.*

FISH. We refer the reader to the word ICHTHYOLOGY for a scientific view of the different orders and varieties of fish,—a class of animals which inhabit the seas, rivers, lakes, &c., and which are so constituted that they cannot exist for any considerable time out of water. We shall here merely give a few instances of the increase of some of them, whose extraordinary fecundity has excited attention, and regarding which the following facts have been verified:—A cod-fish has been found to produce 3,686,760 eggs or spawn; and a ling, 19,248,625. Herrings, weighing from four ounces to five and three-quarters, from 21,285 to 36,960. Mackerel, 20 ounces, 454,061. Soals, of five ounces, 38,772; one of fourteen ounces and a half, 100,362. A flounder of two ounces, 133,407; one of twenty-four ounces, 1,357,403. Lobsters, from 14 to 36 ounces, contain 21,699; a prawn, about 3,800; and a shrimp, from 2,800 to 6,800. And yet, to use the words of a recent writer, "to enumerate the thousands, and even millions of eggs, which are impregnated in the herring, the cod, the ling, and indeed in almost the whole of the esculent fish, would give but an inadequate idea of the prodigious multitudes in which they flock to our shores; the shoals themselves must be seen in order to convey to the mind any just notion of their aggregate mass."—The word *fish* is used in the singular, for fishes in general, or the whole race.——*Fishes*, in heraldry, are the emblems of silence and watchfulness, and are borne either upright, imbowed, extended, endorsed, &c.

FISH'ERIES, places where fish are caught in great abundance, so as to constitute an important article in commerce. The principal fisheries for salmon, herrings, mackarel, pilchards, &c. are along the coasts of England, Scotland, and Ireland; for cod, on the banks of Newfoundland, Nova Scotia, and Labrador; as also on the coasts of Holland; and for whales, in those seas which wash the shores of Greenland, and also in various parts within the tropics.—— The number of vessels engaged in the North American *cod fishery*, British, American, French, Dutch, and Spanish, is calculated to amount to 6000 or 7000, which take about 40,000,000 fish annually. On taking them, they merely cut off the head, open them, sprinkle them with salt and throw them in the hold; and as they make two or three fares in a season, the fish are taken home to be cured. Those vessels which are intended for the Labrador, or Coast fishery, arrive there in June, and select a place for fishing somewhere on the coast of the bay of Chaleurs, the gulf of St. Lawrence, straits of Belleisle, or the entrance to Hudson's Bay. Here they spend the summer, as they cure the fish on the coasts, drying them either on the rocks, or on flakes erected for the purpose. On arriving, they anchor, dismantle their vessels, and convert them into stationary houses. The cod are usually taken by line, nets being but rarely employed; and as they bite with great voracity, almost anything serves for bait.—— *Mackerel* are found in large shoals in the ocean, but especially on the French and English coasts. They enter the English channel in April; and, proceeding as the summer advances, about June they are on the coasts of Cornwall, Sussex, Normandy, Picardy, &c. where the fishery is most considerable. They are taken either with a line or nets: the latter is preferable; and is usually performed in the night-time. They are eaten fresh, and are also pickled in salt or brine.——*Herrings* are remarkable for their immense numbers; they move in shoals, sometimes occupying many miles in extent, and several fathoms in depth. The presence of the herring is easily discovered, by the great flights of birds which accompany them during the day, by the unctuous matter with which the water is covered, and in the night, by the brilliant phosphoric light which they emit. They are taken generally by night in nets, which are sometimes of enormous extent, and are dragged by a capstan. Herrings are very plentiful about the Orcades in June and July; in the German ocean in September and October; and in the English channel in October, November, and December.——The chief *Salmon* fisheries are in England, Scotland, and Ireland, in the rivers, and sea-coasts adjoining to the river mouths. Those most distinguished for salmon in Scotland, are the river Tweed, the Clyde, the Tay, the Dee, the Don, the Spey, the Ness, the Bewley, &c., in most of which it is very common about the height of summer, especially if the weather happen to be very hot, to catch four or five score of salmon at a draught. The chief rivers in England for salmon are the Tyne, the Trent, the Severn, and the Thames. The fishing usually begins about January, and in Scotland they are obliged to cease about the 15th of August, because, as it is then supposed, the fish come up to spawn, it

FISHES PERISH IN WATER THAT HAS BEEN BOILED, IN CONSEQUENCE OF THE WATER BEING THEN DEPRIVED OF ATMOSPHERIC AIR.

FISH OF EVERY KIND, FRESH OR CURED, IF OF BRITISH TAKING OR CURING, AND IMPORTED IN BRITISH SHIPS, ARE FREE OF ALL DUTIES.

would be depopulating the rivers to continue fishing any longer. It is performed with nets, and sometimes with a kind of locks or wears made on purpose, which in certain places have iron or wooden grates so disposed, in an angle, that being impelled by any force in a contrary direction to the course of the river, they may give way and open a little at the point of contact, and immediately shut again, when the force is removed. On coming up the rivers, the fish enter by these valves, which then close, and prevent their return. They are also taken by being attracted to the surface of the water by a light, when they may either be *speared*, or taken in a net spread for the purpose, and lifted with a sudden jerk from the bottom.——*Anchovies* are fished for on the coast of Provence, in the months of May, June, and July, at which season shoals of this fish regularly come into the Mediterranean through the straits of Gibraltar. They are likewise found in plenty in the river of Genoa, on the coast of Sicily, and on that of the island of Gorgona, opposite to Leghorn; these last are reckoned the best. Anchovies are seldom fished for but in the night time; for if a fire be kindled on the poops of the vessels, the anchovies will come in greater numbers into the nets. About 120,000lbs. are annually consumed in Great Britain.——The principal *Sturgeon-fishery* is in the mouth of the Volga, on the Caspian Sea, where the Russians employ a great number of hands, and catch them in a kind of inclosure formed by large stakes, representing the letter Z, repeated several times. These fisheries are open on the side next the sea, and close on the other side, by which means the fish are embarrassed, and easily taken, either in nets or by spearing. At certain seasons, thousands of Cossacks appear on the ice in sledges, each provided with a spear, several poles, and other instruments. As soon as the hetman of the fishers sets forward, they all dash after him in their sledges; the ice is cut, the spears cast; fishmongers, assembled from all parts of the empire, buy the fish, and the ice is soon covered with sturgeons. It soon finds its way to St. Petersburgh, &c; and the value of the fish, including that of the caviar and isinglass, imported into the interior, annually amounts, it is said, to at least 2,000,000 rubles.——The *Northern Whale Fishery*, on the coast of Greenland, begins in May, and continues till the end of July. The manner of taking whales is as follows. As soon as the fishermen hear the whale bellow, they cry out *fall! fall!* and every ship gets out its long-boat, in each of which there are six or seven men: they row till they come pretty near the whale, when the harpooner strikes it with the harpoon. This requires great dexterity, for through the bone of his head there is no striking, but near his spout there is a soft piece of flesh, into which the iron sinks with ease. As soon as he is struck, they take care to give him rope enough; otherwise, when he goes down, as he frequently does, he would inevitably sink the boat: this rope he draws with such violence, that if it were not well watered, it would, by its friction against the sides of the boat, be soon set on fire. The line fastened to the harpoon is six or seven fathoms long, and is called the forerunner: it is made of the finest and softest hemp, that it may slip the easier: to this they join a heap of lines of 90 or 100 fathoms each, and when there are not enough in one long-boat, they borrow from another. The man at the helm observes which way the rope goes, and steers the boat accordingly, that it may run exactly out before; for the whale runs away with the line with so much rapidity, that he would overset the boat, if it were not kept straight. After they have taken a sufficient number of whales, or when they grow too scarce to render their stay any longer advantageous, they cut them up, stow away the fat in the hold of the vessel, and leave the carcasses to be devoured by the bears, who are very fond of the flesh. Nothing then remains but to sail homewards, where the fat is melted down into oil.——The *Southern Whale Fishery* consists of three distinct branches; viz. 1st, the spermaceti whale, which is found in all tropical climates, but especially on the coasts of New Zealand and Japan: the ordinary duration of the voyage of a ship from England, employed in this department of the fishery, is about three years. 2d, the common black whale of the southern seas, met with principally on the coast of Brazil. And, 3d, the sea elephant, or southern walrus, met with in the seas near California, and the islands of Desolation, South Georgia, &c. Vast numbers of these animals are annually captured, and they furnish an abundance of oil.——It appears that, while our northern whale fishery has long been declining, the American southern whale fishery has risen into great importance. It is, however, very generally believed, that in the south, as well as in the north, there is a very perceptible decrease in the supply of fish, and that the whale fisheries have consequently passed their zenith.——Besides, the before-mentioned fisheries, there are several others both on the coasts of Great Britain and in the North Seas, which although not much the subject of merchandize, employ great numbers both of ships and men; as, the *oyster* fishing at Colchester, Feversham, the Isle of Wight, in the Swales of the Medway, &c.; and the *lobster* fishing all along the British channel, the Firth of Edinburgh, on the coast of Northumberland, on the coast of Norway, &c. &c.

FISH'ING, the art of catching fish, whether by means of nets, or of spears, lines, rods, and hooks. By several statutes it is provided, that no person shall fish in any pond or moat, without the owner's consent, on pain of three months imprisonment; nor shall any one take fish in a river without a licence obtained from the owner, upon forfeiture of 10*s*. to the poor, and triple damages to the party aggrieved.

FISH'ING-FROG, in ichthyology, the

Lophius or toad-fish, whose head is larger than its body.

FISSILE, an epithet often used in mineralogy, &c., for that which may be cleft or divided in the direction of the grain, or of natural joints.

FISSIPED, in zoology, an epithet for an animal whose toes are separate, or not connected by a membrane.

FISSURE, a narrow chasm made by the parting of any substance.——In surgery, a crack or slit in a bone, either transversely or longitudinally.

FISTULA, in surgery, a deep, narrow, and callous ulcer, generally arising from abscesses.——*Fistula-lachrymalis*, a disease which attacks the great caruncle in the inward corner of the eye; a disorder accompanied with a flowing of tears.——*Fistula*, an ancient musical instrument resembling our common flute or flageolet.

FISTULAR, among botanists, an epithet applied to leaves and flowers that are tubular, or resemble a hollow pipe.

FISTULIFORM, in mineralogy, an epithet for such substances as are in round hollow columns.

FIT, a sudden and violent attack of disorder, in which the body is often convulsed, and sometimes senseless; as a *fit* of apoplexy or epilepsy, &c. We also apply the word to the first attack or the return of certain diseases; as, a *fit* of the gout, &c.

FITCHET, an animal of the weasel or ferret kind; the polecat.

FIXATION, in chemistry, the making any volatile spirituous body endure the fire.

FIXED AIR, the name formerly given by chemists to the air which was extricated from lime, magnesia, and alkalies, now commonly called carbonic acid gas, [which see].

FIXED OILS, in chemistry, such oils as are obtained by simple pressure; in distinction from volatile or essential oils.

FIXED STARS, in astronomy, such stars as always retain the same apparent position and distance with respect to each other; and are thus distinguished from planets and comets, which are revolving bodies.

FLAG, a general name for colours, standards, banners, ensigns, &c.——*To strike or lower the flag*, is to pull it down upon the cap in token of respect or submission.——*To strike the flag* in an engagement, is the sign of surrendering.——*To hang out the white flag*, is to ask quarter; or in some cases, it denotes that the vessel has no hostile intention, but comes to trade, &c. The *red* flag is a sign of defiance and battle.——*To hang the flag half-mast high*, is a token or signal of mourning.

FLAG, in botany, a sort of rush, or aquatic plant with a bladed leaf. There are different kinds, as the common flag, or water iris, that grows in rivers and bears a yellow flower; the corn flag, or gladiole, a bulbous plant; and the sweet flag, a perennial; which two last are cultivated in gardens.

FLAGELLANTS, in church history, a fanatical sect in the 13th century, who maintained that remission of sins was not to be obtained without flagellation. Accordingly, they walked in procession, preceded by priests carrying the cross, and publicly lashed themselves till the blood ran down their naked bodies.

FLAG-OFFICERS, those who command the several squadrons of a fleet; as admirals, vice-admirals, and rear-admirals. [See ADMIRAL.]

FLAG-SHIP, a ship commanded by a flag-officer, who has a right to carry a flag, in distinction from the secondary vessels under his command.

FLAME, the small parts of an inflammable or unctuous body, that are set on fire, or briskly agitated or thrown off, with a certain vibrative motion at the surface of that body into the open air. Simple ignition never exceeds in intensity of light the body by the contact of which it is produced: but flame consists of volatile inflammable matter, in the act of combustion, and combination, with the oxygen of the atmosphere. Many metallic substances are volatilized by heat, and burn with a flame, by contact of the air in this pure state. Dr. Ure observes, that the flame of combustible bodies may, in all cases, be considered as the combustion of an *explosive mixture* of inflammable gas or vapour with air. It cannot be regarded as a mere combustion at the surface of contact of the inflammable matter. This fact is proved by holding a taper, or a piece of burning phosphorus, within a flame made by the combustion of alcohol. The flame of the taper, or of the phosphorus, will appear in the centre of the other flame, proving that there is oxygen even in its interior part.

FLAMEN, in Roman antiquity, the name of an order of priests, instituted by Romulus or Numa; authors not being agreed on this head. Originally there were three priests so called; the *Flamen Dialis*, consecrated to Jupiter; *Flamen Martialis*, sacred to Mars; and *Flamen Quirinalis*, who superintended the rites of Quirinus or Romulus.

FLAMINGO, in ornithology, a fowl constituting the genus *Phœnicopterus*, of the grallic order; a native of Africa and America. It resembles the heron in shape, but is entirely red, except the quill-feathers.

FLANK, the side of an army, or a battalion encamped on the right and left.——In fortification, that part of a bastion which reaches from the curtain to the face; or any part of a work that defends another work along the outside of its parapet.

FLANNEL, a slight, loose, woollen stuff, which serves to keep the body warm, because, from its light and spongy texture, it does not admit of a passage for the heat.

FLAT, in music, a character which lowers a note one semitone.

FLATTING, in gilding, is the giving the work a light touch, in the places not burnished, with a pencil dipt in size, in which a little vermillion is sometimes mixed.

FLATULENCE, in medicine, air generated in a weak stomach and intestines by

THE NAKED EYE CAN DISCRIMINATE STARS TO THE SIXTH OR SEVENTH MAGNITUDE; TELESCOPES CAN REACH EVEN TO A 16TH.

SEVERAL EARTHY BODIES, BUT MORE ESPECIALLY LIME, ARE REMARKABLE FOR THE GREAT LIGHT THEY GIVE WHEN IGNITED.

imperfect digestion, occasioning distension, uneasiness, and frequent eructations.

FLAX, a plant, from the fibres of which linen thread is made. Common flax is an annual; but the other kinds are perennials.

FLEA, in entomology, an insect of the genus *Pulex*. It is of a deep purple colour, and is remarkable for its agility in leaping, for which it has three pairs of legs. It sucks the blood of larger animals, and its bite is very troublesome. The muscular power of the flea is truly wonderful. It has been known to draw 70 or 80 times its own weight, resist the ordinary pressure of the fingers in our endeavours to crush it, and leap two hundred times its own length. Hence it is called by the Arabians, "the father of leapers." Supposing the same relative force to be infused into the body of a man six feet high, he would be enabled to leap three times the height of St. Paul's! Latreille tells us of a flea which dragged a silver cannon twenty-four times its own weight, mounted on wheels, and was not alarmed when this was charged with gunpowder and fired off. And there is no reason to doubt the assertion; inasmuch as the feats of the "industrious fleas," exhibited in London, are not a whit less marvellous.

FLEAM, an instrument for lancing the gums or bleeding cattle.

FLEECE, a flock of wool, or what comes from a sheep at one shearing.——*Order of the Golden Fleece*, an order of knighthood instituted by Philip II. duke of Burgundy.

FLEET, a squadron of ships of war, belonging to any prince or state. It also denotes any number of trading ships, employed in a particular branch of commerce. Merchant-fleets generally take their denomination from the place they are bound to, as the Turkey-fleet, East-India-fleet, &c. These, in times of peace, go in fleets for their mutual aid and assistance: in time of war, besides this security, they procure convoys of men of war, either to escort them to the places whither they are bound, or to a certain place or latitude.——It is also the name of a prison in London, where debtors are confined; and to which persons are committed by the courts of chancery and common-pleas. It is situated in Farringdon-street, and derives its name from the float or fleet of the river, which, like an uncovered sewer, formerly ran near the building, and was called Fleet-ditch. *Fleta*, from the Saxon *fleot*, signifies, in barbarous Latin, a place where the tide comes up.

FLESH, in anatomy, the muscular part of an animal body, in which the blood-vessels are so small as to retain only blood enough to give them a red colour.——*Flesh*, in botany, the pulpy substance of any fruit or root.

FLEX'OR, in anatomy, a name applied to several muscles, whose office it is to bend the parts to which they belong; in opposition to the *extensors*, which open or stretch them.

FLEX'URE, in geometry, the bending or curving of a line or figure: thus, when a line first bends one way and then another, the point where the bend changes to the other side is called the "point of contrary flexure."

FLINT, in natural history, a semi-pellucid stone, being a subspecies of quartz, of one uniform substance, and free from veins; but of different degrees of colour, and surrounded with a whitish crust. Flints occur almost always in nodules or tubercular concretions of various and very irregular forms. They break with an even, glossy surface; are moderately transparent, very hard, and capable of a fine polish; readily strike fire with steel; make not the least effervescence with aquafortis, and burn to a whiteness. The uses of flint, as an ingredient in the manufacture of glass and fine pottery-ware, are described under the proper heads.

FLITCH, in naval language, the name of a piece of small timber applied to ships for the purpose of sawing up into boat-timber.

FLOAT, a raft or number of pieces of timber fastened together with rafters athwart, to be driven down a river with the tide.——*Floating Breakwater*, a marine contrivance, consisting of a series of square frames of timber, connected by mooring chains or cables, and intended to break the violence of the agitated waves; either to allow vessels to ride within these quadrangular basins with more safety, or to produce smooth water in bathing places on a rough coast.——*Floating-bridge*, in war, a kind of double bridge, the upper one projecting beyond the lower one, and capable of being moved forward by pulleys, used for carrying troops over narrow moats in attacking the outworks of a fort. Floating-bridges of a very large size have also of late been constructed for the transit of passengers and goods across creeks, harbours, &c., by the application of steam-power.——*Floating-light*, on shipboard, a hollow vessel of tinned iron-plate, made in the form of a boat, with a reflector or lanthorn, for the purpose of saving those who may have the misfortune to fall overboard in the night.——*Floating battery*, vessels used as batteries to cover troops in landing on an enemy's coast.——*Float-boards*, those boards fixed to water wheels of under-shot mills, serving to receive the impulse of the stream, by which the wheel is carried round.

FLOAT'ING *(the art of)*. The following information, derived from an unique publication by Mr. Walker, is worth remembering:—"Any human being who will have the presence of mind to clasp the hands behind the back, and turn the face towards the zenith, may float at ease, and in perfect safety, in tolerably still water—ay, and sleep there, no matter how long. If not knowing how to swim, you would escape drowning when you find yourself in deep water, you have only to consider yourself an empty pitcher; let your mouth and nose, not the top part of your heavy head, be the

highest part of you, and you are safe; but thrust up one of your bony hands, and down you go; turning up the handle tips over the pitcher. Having had the happiness to prevent one or two drownings by this simple instruction, we publish it for the benefit of all who either love aquatic sports or dread them."

FLOETZ, or FLETZ, in geology, horizontal beds or strata, which lie over the transition rocks, and of which there are two formations, one called floetz, or secondary, containing the petrified remains of animalcula, and vegetables now extinct; and the other, consisting of similar formations, and the alluvial soils lying upon them, containing the remains of animals similar to those now in existence, and consisting of basalt, wacke, greystone, slate, coal, trap, sand, loam, fragments of ore, &c.

FLOOD, a body of water, rising, swelling, and overflowing land not usually covered with water.——By way of eminence, the universal deluge is called *the flood*.

FLOOD'-GATE, a sluice or gate that may be opened or shut, for the admission or exclusion of the water.

FLOOD'-MARK, the mark which the sea makes on the shore, at the highest tide; high water mark.

FLORA'LIA, a feast kept by the Romans in honour of the goddess Flora. This feast began April the 25th, and continued till the first of May, during which time the *Ludi Florales* were celebrated.

FLOR'ID STYLE, in literary composition, that which is too much enriched with figures and flowers of rhetoric. Longinus uses the terms *florid* and *affected style* indifferently, and describes them as quite contrary to the true sublime.——The *florid style* of architecture, or *florid Gothic*, an elaborate kind of Gothic architecture, filled with points, ramifications, mullions, &c. ——*Florid*, in music, any composition or performance of a rich and embellished kind.

FLOR'IN, a coin of different value; the silver florin of Holland is worth about 1*s*. 8*d*. Most of the gold florins are of a coarse alloy, weighing variously from about fourteen to seventeen carats.

FLORES'CENCE, in botany, the season when plants expand their flowers.

FLOSS'-SILK, the name given to the portions of ravelled silk broken off in the filature of the cocoons. It is carded like cotton or wool, and spun into a soft coarse yarn or thread, for making shawls, socks, and other articles where an inferior kind of silk may be used.

FLOS, in botany, the name of several species of plants. Also the general name for the flower.

FLOS'CULE, in botany, a partial or lesser floret of an aggregate flower.

FLOS'CULOUS, in botany, an appellation given to compound flowers, made up of a number of florets in funnel-shaped petals, and inclosed in the same common cup.

FLOS FER'RI, in mineralogy, a variety of arragonite, occurring in little cylinders, sometimes diverging and ending in a point, and sometimes branched, like coral. It is found in veins of sparry iron, from which it takes its name

FLOT'SAM, in law, a term for goods lost by shipwreck, but which are floating on the sea.——There are two other uncouth terms made use of to describe wrecked goods, viz., *jetsam* and *lagan;* the former, when the goods are sunk; and the latter, when they are sunk, but tied to a cork or buoy to be found again.

FLOUR, the finely ground and sifted meal of wheat or other grain. [See BREAD.]

FLOUR'ISH, in music, a prelude or preparatory air, without any settled rule: also the decorative notes which a singer or instrumental performer occasionally introduces.——In military language, it is the sounding of trumpets on receiving an officer or other person of distinction.

FLOW'ER, that beautiful part of a plant we call the blossom; the parts or divisions of which are called petals. It contains the parts of fructification, or the germ of the fruit; and consists of a calyx, corolla, stamen, and pistil.——A writer in the New Monthly Magazine thus picturesquely describes the blooming flowers on the Alps: —"Wherever there is a handful of earth, there also is a patch of wild flowers. If there be a crevice in the rock sufficient to thrust in the edge of a knife, there will the winds carry a few grains of dust, and there straight up springs a flower. In the lower parts of the Alps they cover the earth with beauty. Thousands, and tens of thousands, blue, and yellow, and pink, and violet, and white, of every shadow and every form, are to be seen, vying with each other, and eclipsing every thing besides. Midway they meet you again, sometimes fragrant, and always lovely; and in the topmost places, where the larch and pine, and the rhododendron, (the last living shrub), are no longer to be seen, where you are just about to tread upon the limit of perpetual snow, there still peep up and blossom "the Forget-me-not," the Alpine ranuncuius, and white and blue gentian, the last of which displays a blue of such intense and splendid colouring, as can scarcely be surpassed by the heavens themselves. It is impossible not to be affected at thus meeting with these little unsheltered things, at the edge of eternal barrenness. They are the last gifts of beneficent, abundant nature. Thus far has she struggled and striven, vanquishing rocks, and opposing elements, and sowing here a forest of larches, and there a wood of pines—a clump of rhododendrons, a patch of withered herbage, and, lastly, a bright blue flower."——Flowers were in great request at the entertainments of the ancients, being provided by the master of the feast, and brought in either at the beginning of the feast, or before the second course. They were likewise used by them in bedecking tombs.

FLOWERS, in chemistry, a term formerly applied to a variety of substances procured by sublimation, and were in the form of slightly colouring powder: hence, in all old

THE COLOURS OF FLOWERS DEPEND ON LIGHT, ALL OF THEM BECOMING WHITE IF THEY ARE KEPT IN TOTAL DARKNESS.

AN OVEN IS DEEMED AT ITS PROPER HEAT FOR BAKING, WHEN FLOUR THROWN INTO IT BECOMES BLACK WITHOUT FLAME.

THE FREEZING POINT IN A THERMOMETER IS WHERE THE QUICKSILVER BECOMES STATIONARY WHEN IMMERSED IN MELTING ICE.

THE BOILING POINT IN A THERMOMETER IS WHERE THE QUICKSILVER REMAINS STATIONARY WHEN STANDING IN BOILING WATER.

books, we find mention made of the flowers of antimony, arsenic, zinc, and bismuth, which are the sublimed oxydes of these metals, either pure or combined with a small quantity of sulphur: we have also still in use, though not generally, the terms flowers of sulphur, benzoin, &c.

FLOWERS, ARTIFICIAL, a considerable article of manufacture, particularly in France, where they are made with astonishing skill and taste, and give employment to an immense number of hands.—The savages of South America manufacture perfect feather flowers, derived from the brilliant plumage of their birds, which closely resemble the products of vegetation; and with this advantage, that the colours never fade.

FLOWER-DE-LIS, (sometimes written, incorrectly, *flower-de-luce*), in heraldry, a bearing representing the lily, the hieroglyphic of royal majesty.—In botany, the iris or flag-flower.

FLOWERS, LANGUAGE OF. Among oriental nations the language of flowers, as it is called, has acquired a significant character. Dr. Madden, in his travels, alluding to this has the following passage:—"A Turkish lady of fashion is wooed by an invisible lover. In the progress of the courtship, a hyacinth is occasionally dropped in her path by an unknown hand, and the female attendant at the bath does the office of a Mercury, and talks of a certain effendi seeking the lady's love, as a nightingale aspiring to the affections of a rose." The charm of novelty has sometimes attracted attention in the Western world to this tender language, and dictionaries have been composed to explain its mysteries; but it is only among the lively and imaginative mortals of the East, that it has ever been brought to perfection.

FLU'ATES, in chemistry, salts of which the fluoric acid is the chief ingredient. They are distinguished by the following properties:—When sulphuric acid is poured upon them, they emit acrid vapours of fluoric acid, which corrode glass; when heated, several of them phosphoresce; they are not decomposed by heat, nor altered by combustibles; and they combine with silica by means of heat. Most of them are sparingly soluble in water.

FLU'ID, in physiology, an appellation given to all bodies whose particles easily yield to the least partial pressure, or force impressed; moving easily among themselves, and accommodating themselves to all changes of position, so as always to preserve a level surface. From the gravity of fluids arises their pressure, which is always proportioned to the gravity: for if the particles of fluids have equal magnitude and weight, the gravity or pressure must be proportioned to the depth, and equal in every horizontal line of fluid.—*Fluidity* stands directly opposed to solidity or firmness, and is distinguished from liquidity and humidity, inasmuch as the latter imply also wetting and adhering. Melted metals, air, ether, smoke, and flame, are fluid but not liquid bodies, their parts being dry, and leaving no sense of moisture. Fluidity is the effect of heat.

FLUOR'IC ACID, in chemistry, a gaseous substance procured from fluor spar, which is of a corroding nature, and will dissolve glass, for which reason it has been used for etching on glass. This acid gas readily combines with water; and when dropped in, a hissing noise is produced with much heat. Its odour is very penetrating, and its vapour dangerous to inspire. When applied to the skin, it instantly disorganizes it, and produces the most painful wounds. This gas has received the name of *fluo-silicic acid*, because it is regarded as a compound of fluoric acid and silica.

FLU'ORINE, in chemistry, the supposed basis of fluoric acid.

FLU'OROUS ACID, in chemistry, the acid of fluor in its first degree of oxygenation.

FLU'OR SPAR, in mineralogy, the foliated fluate of lime; a species of mineral which abounds in nature, and consists of a calcareous earth in combination with fluoric acid. Though sometimes massive, it is almost always regularly crystalized. The variously-coloured specimens called *Derbyshire spar*, are worked upon the turning-lathe into vases and other ornaments.

FLUOSIL'ICATE, in chemistry, a compound of fluoric acid, containing silex, with some other substance.

FLUOSILI'CIC, in chemistry, an epithet for that which is composed of or contains fluoric acid with silex.

FLUSH, a term in a game at cards where they are all of a suit.—In carpentry, a term signifying that two bodies joined together make an even surface.

FLUTE, *the common or English*, a musical wind instrument, consisting of a tube about eighteen inches in length, furnished with holes at the side for the purpose of varying its sounds by stopping and opening them with the fingers.—The *German flute* is formed of several joints or pieces screwed into each other, with holes at the side, and the addition of several brass or silver keys, to temper the tones to the various flats and sharps.

FLUTES, or FLU'TINGS, in architecture, perpendicular channels, or cavities, cut along the shaft of a column or pilaster. They are chiefly effected in the Ionic order, where they had their first rise; though they are also used in the richer orders, as the Corinthian and Composite; but seldom in the Doric, and scarcely ever in the Tuscan. Each column has twenty-four flutes, and each flute is hollowed in exactly a quadrant of a circle. The Doric, however, has but twenty. Between the flutes are little spaces that separate them, called *stria* or *lists*: though, in the Doric, the flutes are frequently made to join to one another, without any intermediate space at all; the list being sharpened off to a thin edge, which forms a part of each flute. Fluted colums are sometimes, though improperly, termed *reeded*.

FLUX, in chemistry, a general term to denote any substance or mixture added to assist in the fusion of minerals. The fluxes made use of in experiments consist usually of alkalies, which render earthy mixtures fusible, by converting them into glass; or by converting glass itself into powder. Limestone, fluor spar, borax, and several earthy or metallic oxydes, are employed as fluxes in metallurgy.——*Flux*, in medicine, an extraordinary issue, or evacuation of some humours of the body.——*Flux and Reflux*, the regular and periodical motion of the sea, which happens twice in 24 hours, 48 minutes. By the flux, or advancing motion of the tide, the water rises; by the reflux, or ebbing of the tide, it sinks; and the period at which the water is in a manner at rest, is called *high-water*.

FLUX'IONS, a method of calculation invented by Sir Isaac Newton. In this branch of mathematics, magnitudes of every kind are supposed to be generated by motion. This science is employed in the investigation of curves, in finding the contents of solids, and computing their surfaces; in finding the centres of gravities and oscillation of different bodies; the attractions of bodies under different forms; the direction of wind, which has the greatest effect on an engine; and in the solution of many other interesting and important problems.

FLY, in zoology, a winged insect of various species, the distinguishing characteristic of which is, that their wings are transparent. By this, flies are distinguished from beetles, butterflies, grasshoppers, &c. Some flies have two wings, and others four. ——*Fly*, in mechanics, a heavy wheel at right angles with the axis of a windlass or jack, to regulate the motion of a machine. When used as a collector of power, the fly is frequently seen with heavy knobs at the opposite ends of the straight line.——*Fly*, among mariners, that part of a compass on which the thirty-two points are described.

FLY'-BLOW, the deposit of eggs by flies, which afterwards become maggots, as the grub state of future flies.

FLY'-CATCHER, in ornithology, a genus of birds, the *Musicapa*, with a bill flatted at the base, almost triangular, notched at the upper mandible, and beset with bristles. They are of infinite use in destroying those numerous swarms of noxious insects engendered by heat and moisture, which are continually on the wing, and which, though weak and contemptible when individually considered, are formidable to vegetation by their numbers.

FLY'ERS, in architecture, stairs that do not wind, but are made of an oblong square figure, and go straight forward, the second standing behind the first, and so on.

FLY-HON'EYSUCKLE, in botany, a shrub; the *Halleria lucida* of Linnæus.

FLY'ING, the progressive motion of a bird, or other winged animal, in the liquid air. The parts of birds chiefly concerned in flying, are the wings, by which they are sustained or wafted along. "The manner of flying is this: the bird first bends his legs, and springs with a violent leap from the ground; then opens and expands the joints of his wings, so as to make a right line perpendicular to the sides of his body: thus the wings, with all the feathers therein, constitute one continued lamina. Being now raised a little above the horizon, and vibrating the wings with great force and velocity perpendicularly against the subject air, that fluid resists those successions, both from its natural inactivity and elasticity, by means of which the whole body of the bird is protruded. The resistance the air makes to the withdrawing of the wings, and consequently the progress of the bird, will be so much the greater, as the waft or stroke of the fan of the wing is longer: but as the force of the wing is continually diminished by this resistance, when the two forces come to be in equilibrio, the bird will remain suspended in the same place; for the bird only ascends so long as the arch of air the wing describes makes a resistance equal to the excess of the specific gravity of the bird above the air. If the air, therefore, be so rare as to give way with the same velocity as it is struck withal, there will be no resistance, and consequently the bird can never mount." Birds never fly upwards in a perpendicular line, but always in a parabola. In a direct ascent, the natural and artificial tendency would oppose and destroy each other, so that the progress would be very slow. In a direct descent they would aid one another, so that the fall would be too precipitate.

FLY'ING-FISH, the *Exocœtus* of naturalists; a fish which is enabled, by the vibration of its large pectoral fins, to leave the water when alarmed or pursued, and sustain itself for several seconds in the air. In tropical seas they rise from the water in shoals, of thousands at a time, when disturbed by the passing of a ship, or pursued by a dolphin. They spring from the crest of a wave, and, darting forward, plunge into another to wet the membrane of the fins, and in this manner continue their flights for several hundred yards together. [See EXOCŒTUS.]

FLYING-PIN'ION, the part of a clock, having a fly or fan, by which it gathers air, and checks the rapidity of the clock's motion, when the weight descends in the striking part.

FLY-OR'CHIS, in botany, the *Orchis muscifera*, a plant, so called from the resemblance it bears in figure to that of a fly.

FLY'TRAP, in botany, a species of sensitive plant, the *Dionœa muscipula*, or Venus' Fly-trap; the leaves of which consist of two lobes, that have the property of closing when irritated within, and consequently of seizing any insects which happen to light on them.

FO'CAL DISTANCE, in mathematics, the distance of the focus, which, in the parabola, is its distance from the vertex: and in the hyperbola, from the centre.

THE FOOT OF A FLY IN SHAPE RESEMBLES A CURRYCOMB, AND WITH IT THEY BRUSH OFF THE DUST FROM THEIR HEAD AND WINGS.

A DETACHMENT OF TROOPS EMPLOYED TO HOVER ABOUT AND WATCH THE MOTIONS OF AN ENEMY, IS CALLED A "FLYING-PARTY."

FO'CILE MA'JUS, in anatomy, the greater bone of the arm, called *ulna;* or the greater bone of the leg, called *tibia.* The lesser bone of the arm or leg is termed *focile minus.*

FOD'DER, in husbandry, any kind of food for cattle. *Green fodder* consists of grass, tares, hay, &c. *Dry fodder,* of oats, barley, and beans.

FODDERTO'RIUM, in law, provision of fodder or forage, made to the king's purveyors.

FO'CUS, in optics, the point of convergence or concourse, where all the rays of light meet after passing through a convex lens. It should be observed, however, that the focus is not, strictly speaking, a *point,* but a small circle, one-eighth the thickness of the lens, when it is convex on both sides; for the rays are not accurately collected into one and the same place or point, owing to the different nature and refrangibility of the rays of light, to the imperfections in the figure of the lens, and other similar impediments.——*Focus,* in geometry and conic sections, a certain point in the parabola, ellipse, and hyperbola, where the rays reflected from all parts of these curves concur and meet.

FŒTUS, in physiology, signifies the young of animals while in the womb, particularly after it is formed; till which time it is more properly called an *embryo.*

FOG, an imperfect condensation of the air, consisting of a large proportion of air, and a small one of aqueous vapour. Fogs happen in winter, about the change of the weather, from frost to thaw, or from thaw to frost: but in summer and spring, from the expansion of the dew. Fogs are more frequent in those seasons of the year when there is a considerable difference of temperature in the different parts of the day; as, for instance, in autumn, when, in the warmest part of the day, the air is capable of holding a great quantity of aqueous matter in solution, which on cooling towards evening, it is no longer capable of dissolving.——A correspondent of the "Magazine of Natural History," in speaking of the density and awful blackness of a "London fog," particularly of one which occurred Jan. 27, 1831, says, "this extraordinary appearance is, however, caused by a very ordinary accident, viz. a change of wind; and which may be accounted for as follows.—The west wind carries the smoke of the city to the eastward in a long train, extending to the distance of twenty or thirty miles; as may be seen in a clear day, by any person on an eminence five or six miles from the city, and looking across in the direction of the wind; say from Harrow-on-the-Hill, for instance. In this case, suppose the wind to change suddenly to the east, the great body of smoke will be brought back by an accumulated mass, and, as this repasses the city, augmented by the clouds of smoke from every fire therein, it causes the murky darkness alluded to."

FOG'-BANK, an appearance in hazy weather, which frequently resembles land at a distance, but which vanishes as you approach it.

FOIL, among jewellers, a thin leaf of metal placed under precious stones, to increase their lustre and improve their colour. Hence anything of a different colour or quality, which serves to adorn or set off another thing to advantage, is termed a *foil.*——In fencing, an elastic piece of steel, or sword without a point, to fence with by way of exercise. The *foil* usually has a button or piece of cork at the end, covered with leather.

FOLIA'CEOUS, in botany, having leaves intermixed with flowers; as, a *foliaceous* spike.——In mineralogy, having the form of a leaf or plate; as, *foliaceous* spar.

FO'LIAGE, in architecture, the representation of leaves, flowers, and branches, intended to ornament and enrich capitals, friezes, pediments, &c.

FO'LIATE, in botany, furnished with leaves.

FO'LIATED, in mineralogy, consisting of thin plates; lamellar; as, a *foliated* structure.

FO'LIATING, a term used for covering the backs of looking-glasses with a thin coat of tin and quicksilver.

FOLIA'TION, in botany, the leafing of plants, or the disposition of the nascent leaves within the bud.

FO'LIO, in account books, denotes a page, or rather both the right and left hand pages, these being expressed by the same figure.——*Folio,* a book of the largest size, the leaves of which are formed by once doubling a sheet of paper.

FO'LIOLE, in botany, one of the single leaves, or leaflets, which together constitute a compound leaf.

FO'LIOUS, in botany, having leaves intermixed with the flowers.

FO'LKLAND, in law, copyhold land; or land held by the commonalty at the will of the lord.

FO'LKMOTE, a word used in England before the Norman conquest to denote an annual assembly of the people, answering in some measure to a modern parliament. Some authors however, allege that the folkmote was an inferior court, or common-council of a city or borough.

FOL'LICLE, in botany, a seed-vessel opening on one side longitudinally, and having the seeds loose in it.

FOMENTA'TION, the act of bathing any part of the body with a decoction of herbs, &c. made hot, for the purpose of easing pain or dispersing tumours. A similar application with bags of herbs and other ingredients is called a dry fomentation.

FONT, a large basin or stone vessel in which water is contained for baptizing infants, or other persons. It is so called, probably, because baptism was usually performed among the primitive Christians at springs or fountains.——*Font,* or *Fount,* a complete assortment of printing types of one size, including a due proportion of all the letters, points, figures, accents, &c.

CLOUDS, FOGS, AND MISTS, ARE ALL ALIKE; THE VAPOUR AT A DISTANCE WE CALL A CLOUD; WHEN WE ARE IMMERSED IN IT, A FOG.

IN 1783, ALL EUROPE WAS ENVELOPED WITH A DRY FOG, AT THE MOMENT OF A VOLCANIC ERUPTION IN ICELAND AND CALABRIA.

FONTINA'LIA, in Roman antiquity, a religious feast celebrated Oct. 13, in honour of the nymphs of wells and fountains. The ceremony consisted in throwing nosegays into the fountains, and putting crowns of flowers upon the wells.

FOOD, in its largest sense, direct and metaphorical, includes whatever is taken for nourishment; in reference to the animal economy, whatever solid or liquid aliment is received into the stomach; and, in a more confined sense, solid aliment only. After being masticated in the mouth, our food passes through the gullet, into the stomach, where it is reduced to a pulp, called chyme. This passes into the pylorus and duodenum, where it is separated into chyle, which is absorbed by the lacteal vessels of the animal, and the superfluous parts are ejected through the colon and rectum.——We are told that in the first ages men lived upon acorns, berries, and such fruits as the earth spontaneously produces; then they proceeded to eat the flesh of wild animals taken in hunting: but their numbers decreasing, and mankind multiplying, necessity taught them the art of cultivating the ground, to sow corn, &c. When they began to make a free use of domestic animals, they roasted them only; boiling was a refinement in cookery which for ages they were strangers to; and fish, living in an element men were unused to, were not eaten till they grew somewhat civilized.

FOOL, in ordinary language, signifies one who is deficient in intellect, or who pursues a course contrary to the dictates of reason. In scripture the word *fool* is often used for a wicked or depraved person. But in its most legitimate sense, the term *fool* means one who is destitute of reason; either from having been born an idiot: or become idiotic from some injury done to the brain.——*To play the fool*, to act the buffoon; to occupy one's time in absurd trifling.

FOOT, the lower extremity of the leg, or that part of the body of most animals whereon they stand. Animals are distinguished, with respect to the number of their feet, into *bipeds*, two-footed; as men and birds; *quadrupeds*, four-footed; like most land animals; and *multipedes*, or many-footed, as insects.——*Foot*, a measure of length, consisting of 12 inches; supposed to be taken from the length of a man's foot. Geometricians divide the foot into 10 digits, and the digit into 10 lines.——A *Foot square*, is the same measure, both in breadth and length, containing 144 square or superficial inches.——And a *cubic or solid foot* is the same measure in all the three dimensions, length, breadth, and depth or thickness, containing 1728 cubic inches.——*Foot*, in poetry, a certain number of syllables which serve for measuring the verse.——*Foot*, in military language, soldiers who serve on foot; or infantry, as distinguished from cavalry.

FOOT'STALK, in botany, a partial stem supporting the leaf, or connecting it with the stem and branch; a petiole.

FOR'AGE, all kind of provender for cattle, especially for horses in time of war.——*A foraging party*, those who are sent out by the general in order to collect provisions either for the horses or for the troops.

FORA'MEN, in anatomy, a name given to several apertures, or perforations in various parts of the body; as, 1. the external and internal foramina of the cranium or skull; 2. the foramina in the upper and lower jaw; 3. the foramen lachrymale; and, 4. the foramen membranæ tympani.——*Foramen ovale*, an oval aperture or passage through the heart of a fœtus, which closes up after birth. It arises above the coronal vein, near the right auricle, and passes directly into the left auricle of the heart, serving for the circulation of the blood in the fœtus, till such time as the infant breathes and the lungs are open.

FORCE, in mechanics, the energy or impulse with which one body affects another, with reference to the direction of motion, and the centres of the masses. It consists in the transfer of the motion of one body to another.——*Physical force*, is the force of material bodies. *Moral force*, is the power of acting on the reason in judging and determining.——*Force*, in law, signifies any unlawful violence offered to persons or property.——*A forcible entry*, is a violent and actual entry into houses, or lands; and a *forcible detainer*, is a violent withholding the possession of lands, &c., so that the person who has a right of entry is hindered therefrom.——The word *force* has numerous other meanings; as strength or power for war—virtue—efficacy—validity—destiny—necessity, &c.

FOR'CEPS, in surgery, an instrument for extracting anything from a wound, &c. Also, a pair of scissors for cutting off or dividing the fleshy membraneous parts of the body.

FO'RCING, among gardeners, a method of obtaining fruits and flowers before their season by the application of heat.——The fining down wines so as to render them fit for immediate use, is also called *forcing*.

FORE, a sea term for near the stem; as 'fore and aft,' that is, from stem to stern.

FO'RECASTLE, a short deck in the fore part of the ship above the upper deck.

FORECLO'SE, in law, to exclude or bar the equity of redemption on mortgages, &c.

FO'REMAST, the mast of a ship which is placed in the forepart or forecastle, and carries the foresail and foretop-sail yards. *Foremast-men*, those who take in the topsails, furl the sails, &c.

FORE-SHORT'ENING, in painting, the art of correctly conveying to the mind the impression of the entire length of an object, when represented as viewed in an oblique or receding position.

FOR'EST, a large tract of land covered with trees; differing from a *wood* chiefly in its extent.——The *forests* in England are of such great antiquity, that, excepting the New Forest in Hampshire, by William the Conqueror, and Hampton-court, by Henry

IN GOOD BREAD, EVERY 100 LBS. IS FOUND TO CONTAIN 80 LBS. OF NUTRITIOUS FOOD; BUTCHER'S MEAT AVERAGES ONLY 35 LBS. IN 100.

POTATOES YIELD 25 LBS. OF NUTRIMENT IN 100; CARROTS, 14 LBS.; AND GREENS, ONLY 8 LBS.; WHILE FRENCH BEANS, IN THE GRAIN, YIELD 92 LBS.

VIII. it is said that there is no record or history, which makes any certain mention of their origin, though they are mentioned by several writers, and in many of our laws and statutes. The four principal forests are the New-forest, Sherwood-forest, Dean-forest, and Windsor-forest.

FO'RESTALLING, the act of buying or bargaining for any provisions or merchandize, before they reach the market to which they were going, with an intent to sell the same again at higher prices.

FO'RESTAY, in a ship's rigging, a large rope reaching from the foremast head towards the bowsprit end, to support the mast.

FOR'FEITURE, in law, the loss of some right, privilege, or estate, goods, lands, or employments, &c. for neglecting to do one's duty, or for some crime committed.

FORGE, a small furnace, wherein smiths and other artificers of iron or steel, &c. heat their metals red-hot, in order to soften and render them more malleable. The word *forge* is also used for a large furnace, or *iron-works*, in which the ore taken from the mine is melted down.

FORFIC'ULA, in entomology, the Earwig [which see.] ——*Forficula marina, or Sea-earwig*, an insect found about the sea-shores, and so called from its resemblance to the common earwig.

FO'RGERY, in law, the fraudulent making or altering any deed, or writing, &c. to the prejudice of another man's right, particularly the counterfeiting the signature of another with intent to defraud.

FORGET'-ME-NOT, (*Myosotis palustris*) in botany, a small herbaceous plant, bearing alternate and lanceolate leaves, and small blue flowers, whose brilliancy renders them conspicuous notwithstanding their diminutive size. This little flower (owing perhaps to its clear blue, the colour of fidelity) is considered the emblem of friendship, and accordingly finds a conspicuous place in the bouquets of love and sentiment, both floral and poetical.

FORLORN-HOPE, in military affairs, a detachment of men appointed to lead in an assault, to storm a counterscarp, enter a breach, or perform any other service attended with great and imminent peril.

FORM, in physiology, the essential and distinguishing modification of the matter of which any body is composed.——*Form*, in a moral sense, the manner of being or doing a thing according to rules: thus we say, a *form* of government, a *form* of argument, &c.——*Form*, in law, the rules established and requisite to be observed in legal proceedings.——*Form*, in mechanics, a kind of mould in which any thing is wrought.——*Form* also denotes the external appearance or surface of a body, or the disposition of its parts, as to the length, breadth, and thickness.——*Essential form* is that mode of existence which constitutes a thing what it is, and without which it could not exist.

FORM (pronounced as *form*, a stool to sit on), in printing, pages or columns of type, properly arranged, and enclosed and locked in an iron frame called a chase, for the purpose of being put to press. There are two forms required for every sheet, one for each side; and each form consists of more or fewer pages, according to the size of the books.——In schools, a *class*.

FORM'ALIST, one who observes the outward forms and ceremonies of worship, for appearance' sake, without possessing the life and spirit of pure religion.

FORMA PAU'PERIS, a law term. When a person has just cause of suit, but is so poor, that he cannot defray the usual charges of suing at law or in equity, on making oath that he is not worth 5*l*., and producing a certificate from some lawyer that he has good cause of suit, the judge will admit him to sue in *forma pauperis*; that is, without paying any of the usual fees to counsel, &c.

FORMA'TIONS, in geology, the general name of the various strata which compose the surface of the earth, and supposed to be formed at different remote periods. In most of the formations there are some mineral and fossil affinities; and in many, even where the external differences are apparently complete, there are some common characters, by the aid of which a passage from the one to the other can be traced. It is also worthy of observation, that the unvarying succession of formations to each other, in the geological series, has been found to exist in parts of the earth widely separated from each other, and warrants not only the belief that they have come into their order successively, but that the causes which brought each formation to its place were of one class, whether of igneous or of aqueous origin, and operated simultaneously.

FOR'MIC A'CID, in chemistry, originally the acid of ants, which was extracted from them either by distillation or expression with water. At the present day *formic acid* is procured from the application of a gentle heat to a mixture of tartaric acid, water, and the protoxide of manganese. It is extremely sour, and continues liquid at very low temperatures.

FORMI'CA, the Ant [which see.]

FORMI'CA-LE'O, or Ant-lion, in entomology, an insect so called from its devouring great numbers of ants. It is the caterpillar or worm of a fly much resembling the libellulæ, or dragon-flies.

FOR'MULA, in mathematics, a general theorem or literal expression for resolving any part of a problem.——*Formula*, in theology, a profession of faith.

FORT, in the military art, a small fortified place, surrounded with a moat, rampart, and parapet; or with palisades, stockades, and other means of defence.

FORTIFICATION, the art or science of fortifying a place, or of putting it in such a posture of defence, that every one of its parts defends, and is defended, by some other parts, by means of ramparts, parapets, moats, and other bulwarks; so that a small number of men within may be

able to defend themselves for a considerable time against the assaults of a numerous army without.——*Ancient fortification*, at first consisted of walls or defences made of the trunks and large branches of trees, mixed with earth, to secure them against the attacks of the enemy. This was afterwards altered to stone-walls, on which were raised breast-works, behind which they made use of their darts and arrows in security.——*Modern fortification*, is that which is flanked and defended by bastions and out-works, the ramparts of which are so solid, that they cannot be beat down but by the continual fire of several batteries of cannon. The principal works belonging to a fortification are, the ditch or trench made round each work; the rampart, or elevation of earth, raised along the faces of any work, to cover the inner part; the parapet, or that part of a rampart which serves to cover the troops planted there; the bastion, that part of the inner enclosure of a fortification making an angle towards the field; the counterscarp, the slope of the ditch facing the body of the place; the covert way, the space extending round the counterscarp; and the glacis, the part beyond the covert way, to which it serves as a parapet. In recent times, however, fortification has undergone important changes, and engineers have adopted different systems; but those which have acquired the greatest reputation in Europe, are the systems of count Pagan, the baron de Coehorn, von Scheiter, and marshal Vauban.

FORTITUDE, the basis or source of coolness and intrepidity in danger, of patience in suffering, of forbearance under injuries, and of magnanimity in all conditions of life. In fine, fortitude is the virtue of a rational and considerate mind, founded on a sense of honour and a regard to duty. The motives to fortitude are many and powerful, and this virtue tends much to the happiness of the individual, by giving composure and presence of mind, and keeping the other passions in due subordination.

FO'RUM, in Rome, a public place where causes were judicially tried, and orations delivered to the people. There were six of these forums, viz. the *Romanum*, *Julianum*, *Augustum*, *Palladium*, *Trojanum*, and *Salustii* forum. The chief of these was the *forum Romanum*, called by way of eminence *the forum*. In this was an apartment called the rostra, where the lawyers pleaded, and the orators harangued the people, &c. Here was also the *comitium*, or hall of justice, with the sanctuary of Saturn, the temple of Castor, &c., altogether forming a most splendid place. The word *forum* was also applied to a place of traffic, or market-place: of these there were vast numbers, as the *forum piscarium*, *olitorium*, &c. These were generally called *fora venalia*, in distinction from the former, which were called *fora civilia*.——In the law, *forum* signifies a court of justice, the place where disputed rights are settled; hence *forum competens*, a competent jurisdiction; *forum incompetens*, a court not authorized to try the cause, &c.

FOSS, in fortification, a hollow ditch, commonly full of water, lying between the scarp and the counterscarp.——*Foss*, or *fossa*, in anatomy, a kind of cavity in a bone, with a large aperture, but no exit or perforation.——*Fossa*, in our ancient customs, was used to signify a ditch full of water, wherein women convicted of felony were drowned.——*Foss-way*, one of the four principal highways of England, that anciently led through the kingdom; supposed to have been the work of the Romans, and having a ditch on one side. One of these reached from Totness in Devonshire to Barton on the Humber.

FOS'SIL, in natural history, any substance penetrated with earthy or metallic particles, which is dug out of the earth, whether that be its natural or its accidental situation; the first being called native, the second extraneous.——1. *Native fossils* are substances found either buried in the earth, or lying on its surface, of a plain simple structure and showing no signs of containing vessels, or circulating juices; as earths, salts, and metallic bodies. ——2. *Extraneous fossils* are bodies of vegetable or animal origin, accidentally buried in the earth: as plants, shells, bones, &c., many of which are petrified. The oldest rocks of the secondary formation contain aquatic plants and reeds, and adjoining these are madrepores, encrinites, and various zoophytes, little removed above vegetation; in the next series are ammonites, and various mollusca, very different from any existing animals: above these are found fishes, bamboos, and ferns, all of extinct species. Between the old and the newest floetz formations, shells and fish increase in number, with amphibia; as lacerta, testudo, and some serpents. In the newest floetz formations are found remains of seals, whales, birds, monstrous land animals, and fresh-water shells; and in the alluvial and modern soils, in peat bogs, and low beds, bones of the elephant, rhinoceros, hippopotamus, &c. appear.

FOS'SIL-CO'PAL, a resinous substance found in perforating the bed of blue clay at Highgate, near London; which appears to be a true vegetable gum or resin, partly changed by remaining in the earth. It is sometimes called Highgate resin.

FOTH'ER, a weight of lead containing eight pigs. At the mines the weight of a *fother* is 22 cwt. and a half; but with the plumbers in London it is 19 cwt. and a half.

FOTH'ERING, a sea term for stopping leaks in the bottom of a ship, by letting down a sail by the corners, and putting chopped rope-yarn, wool, oakum, &c. between it and the ship's side. By repeating this operation several times, these substances are sometimes sucked into the cracks, and the leak becomes either wholly or partially stopped.

FOUGA'DE, in the art of war, a small mine, in the form of a well, eight or ten feet wide, and ten or twelve deep, dug un-

THE FOSSIL OR ORGANIC REMAINS IN STRATA ARE ALWAYS THE SAME KIND IN SIMILAR STRATA, WHEREVER THEY MAY BE FOUND.

REMAINS OF TURTLES, CROCODILES, AND ELEPHANTS' TUSKS, HAVE BEEN DUG UP AT HIGHGATE AND HAMPSTEAD, NEAR LONDON.

der some fortified place, charged with sacks of powder, and covered with stones or earth, for destroying the works by explosion.

FOUNDATION, the basis or groundwork of any thing; usually that part of a building which lies on the ground.——*Foundation* denotes also a donation or legacy, either in money or lands, for the maintenance and support of some community, school, or charitable institution.

FOUN'DER, one from whom any thing originates; as, the founder of a sect of philosophers; the founder of a family. Also one who endows any public establishment.——*Founder*, likewise implies, an artist who casts metals, in various forms, for different uses; as a founder of cannon, bells, statues, printing type, &c.

FOUN'DRY, or FOUN'DERY, signifies the house and works occupied in casting metals; and also the art of casting them into various forms for use. As, at the present day, our iron foundries are by far the most important, we shall endeavour to give (on the authority of Dr. Ure's admirable work,) a slight sketch of them:—The operations of an iron foundry consist in re-melting the pig-iron of the blast furnaces, and giving it an endless variety of forms, by casting it in moulds of different kinds. These moulds are in general very heavy, consisting of two parts at least, which must be separated, turned upside down several times, and replaced very exactly upon one another. The casting is generally effected by means of large ladles or pots, in which the melted iron is transported from the cupola, where it is fused. Coke is the only kind of fuel employed to effect the fusion. A well-mounted foundry, such as the author describes, (consisting of the various workshops, magazines for pig-iron, a vast area properly called *the foundry*, in which the moulds are made and filled with the melted metal, blast and air furnaces, &c.) will occupy a square surface of about 80 yards in each side, and will be capable, by casting in the afternoon and evening of each day, partly in large and partly in small pieces, of turning out from 700 to 800 tons per annum, with an establishment of 100 operatives, including some moulding boys. There are three distinct methods of making the moulds: 1. in green sand; 2. in baked sand; and 3, in loam. And it is of course essential,—that each mould should present the exact form of its object,—that it should have such solidity that the melted metal may be poured into it, and fill it entirely without altering its shape in any point,—and that the air which occupies the vacant spaces in it, as well as the carburetted gases generated by the heat, should have a ready vent; for if they are but partially confined, they expand by the heat, and may crack, even blow up the moulds, or at any rate become dispersed through the metal, making it vesicular and unsound. The metal is usually melted at a cupola furnace, the heat of which is so intense, from its construction and the effect of the blowing machine, that the metal begins to melt in about twenty minutes after its introduction; and successive charges are then made every ten minutes nearly, the amount of the charges varying with the size of the furnace, and the speed required for the operation; the pigs have been previously broken into pieces weighing at most 14 or 16 lbs.—The chief talent of the founder consists in discovering the most economical mixtures, and so compounding them as to produce the desired properties in the castings. One piece, for example, may be required to have great strength and tenacity to bear heavy weights or strains; another must yield readily to the chisel or the file; a third must resist sudden alternations of temperature; and a fourth must be pretty hard. The filling in of the melted metal is managed in two ways. For strong pieces, whose moulds can be buried in the ground at seven or eight yards distance from the furnace, the metal may be run in gutters, formed in the sand of the floor, sustained by plates or stones. The clay plug is pierced with an iron rod when all is ready. When from the smaller size, or greater distance of the moulds, the melted metal cannot be run along the floor from the furnace, it is received in cast iron pots or ladles, lined with a coat of loam: these are either carried by the hands of two or more men, or transported by the crane. Between the successive castings, the discharge hole of the furnace is closed with a lump of clay, applied by means of a stick, having a small disc of iron fixed at its end. After the metal is somewhat cooled, the moulds are taken asunder, and the excrescences upon the edges of the castings are broken off with a hammer; and they are afterwards more carefully trimmed or chipped by a chisel when quite cold. The loss of weight in founding is about 6½ per cent. upon the pig-iron employed. Each casting always requires considerably more than its own weight of iron. This excess forms the gates, false seams, &c.; the whole of which being deducted, shows that 1 cwt. of coke is consumed for every 3 cwt. of iron put into the furnace; for every 138 cwt. of crude metal, there will be 100 cwt. of castings, 32 of refuse pieces, and six of waste.

FOUN'TAIN, in natural philosophy, a spring or source of water rising out of the earth. Among the ancients, fountains were held sacred, and even worshipped as a kind of divinities.——An *artificial fountain*, or *jet d'eau*, is water ejected from a pipe, either by being raised to a higher level than the top of the pipe, or by being compressed by an engine. [See ARTESIAN WELLS.]

FOVIL'LA, in botany, a fine substance, imperceptible to the naked eye, emitted from the pollen of flowers.

FOX, *(Vulpes,)* in zoology, an animal of the genus *Canis*, much resembling the common dog in form, and chiefly distinguished by a long brushy tail. He burrows in the earth, and is generally described as crafty and cunning beyond measure; but much of the cunning suspiciousness of manner for

THE SWIFT FOX (CANIS VELOX) INHABITS THE VAST PLAINS OF TARTARY, AND IN SPEED CAN SURPASS THE FLEETEST ANTELOPE.

THE PRIVILEGE OF LETTERS PASSING FREE OF POSTAGE TO AND FROM MEMBERS OF PARLIAMENT WAS ESTABLISHED BY 35 GEO. III.

which the fox is notorious, arises from his defective vision; in broad day-light his attitudes and motions partake of the uncertainty of his sight, and he appears to be most cunning when he is really most short-sighted. Foxes prowl about in the night, and prey on poultry, rabbits, and hares; but they are very timid, fleet, and, when old, sagacious in evading their enemies. They emit an odour which enables dogs to scent and follow them. Foxes breed only once a-year, and bring forth commonly in April four or five young, which, like puppies, are born blind.

FOX'GLOVE, in botany, the *Digitalis* of Linnæus, the species of which are mostly perennials.

FOWL, the largest sort of birds, whether domestic or wild, as geese, pheasants, partridges, &c.; also a full-grown chicken or young hen.

FOWL'ING, the art of taking or killing birds, either by means of snares or nets, or by various devices, as imitating their voices or using decoy birds and the like.

FRAC'TION, in arithmetic and algebra, a combination of numbers representing one or more parts of a unit or integer: thus four-fifths is a fraction, formed by dividing a unit into five equal parts, and taking one part four times. Fractions are divided into *vulgar* and *decimal*. Vulgar fractions are expressed by two numbers with a line between them. In these, the figure above the line is called the *numerator*, and the figure below the line the *denominator*. The theory of vulgar fractions is one of the most important in algebra, and a correct understanding of them is of great importance for the proper prosecution of arithmetical and mathematical studies.——*Decimal fractions* include every fraction, the denominator of which is ten, or a power of it. They are usually expressed by writing the numerator only, with a point before it by which it is separated from the whole number; thus .5, which denotes five-tenths, or half the whole number: .25, that is, a fourth part of the whole number.

FRAC'TURE, in mineralogy, the manner in which a mineral breaks, which is one of its specific characters. The fracture is either compact or smooth, foliated or lamellar, conchoidal, striated, or nodular, &c.——*Fracture*, in surgery, the breaking of any bone by an external act of violence. It is *simple* when the bone only is divided; *compound*, when the bone is broken, with a laceration of the integuments.

FRÆ'NUM, in anatomy, a term applied to some membranous ligaments of the body; as, the *frænum linguæ*, or ligament under the tongue, which sometimes ties it down too close to the bottom of the mouth, and then requires to be incised or divided, in order to give this organ its proper and free motion.

FRAGA'RIA, in botany, a genus of plants, class 12 *Icosandria*, order 3 *Polygynia*. The species consist of several kinds of strawberries.

FRANC, a French coin, worth twenty sols, or ten-pence sterling.

FRAN'CHISE, in a general sense, signifies some privilege or exemption from ordinary jurisdiction. A franchise may be vested either in bodies politic, or corporations; in borough towns, or in individuals; as the electoral franchise. Corporate liberties being usually held by charter, are all said to be derived from the crown, but some lie in prescription without the help of any charter.

FRANCIS'CANS, Friars-Minor, or Grey-Friars, the religious order of Saint Francis, by whom they were founded about the year 1200.

FRANK, an exemption from paying postage for letters, which before the "penny-postage" bill came into operation, Jan. 10, 1840, was enjoyed to a certain extent by all members of parliament. It is said, that before this act abolished the privilege of *franking*, nine millions of letters were annually sent post-free. —— *Frank-free*, a term much used in our old law, as frank-pledge freemen, who used to be pledges or sureties for the good behaviour of those who were of their community.——*Frank-ferm*, anciently signified lands changed in the nature of the fee by feoffment, &c. out of the knight's service for other certain yearly services.——*Frank-fold*, is where the lord has the liberty of folding his tenants' sheep within his manor. —— *Frank-almoigne*, in law, a tenure by which a religious corporation holds lands to them and their successors for ever, on condition of praying for the soul of the donor.—— *Frank-chase*, or *free-chase*, is the liberty of keeping beasts of chase or royal game therein, protected even from the owner of the land himself, with a power of hunting them thereon.

FRANK'INCENSE, an odoriferous, dry, resinous substance, procured from the juniper tree in Turkey and the East Indies. It is of a pale yellow colour, very inflammable, and is used as a perfume.

FRANKS, an appellation given by the Turks, and other nations of Asia, to all the people of the western parts of Europe, English, French, Italians, &c.

FRANK'LINITE, a mineral compound of iron, zinc, and manganese, found in New Jersey, North America, and named from Dr. Franklin.

FRATER'NITIES, in the middle ages, consisted of pious laymen who formed societies for the purpose of relieving the sick and destitute, and performing other Christian duties.

FRA'TRAGE, in law, a partition among brothers or co-heirs coming to the same inheritance or succession; also that part of the inheritance that comes to the youngest brothers.

FREE-BENCH', in law, a widow's dower in a copyhold estate.

FREE'HOLD, that land or tenement which is held in fee simple, fee tail, or for term of life.——*Freehold in deed* is the real possession of lands, &c. in fee or for life.

——*Freehold in law* is the right a person has to such lands or tenements before his entry.

FREE'HOLDER, the possessor of a freehold estate, or of a lease for life, worth 40*s.* per annum, who is thereby qualified to vote for a knight of the shire, or representative of the county in parliament.

FREE'MAN, in ancient law, one free from servitude, as distinguished from a vassal or boudsman. At the present day, a freeman is one who enjoys the freedom of a city or borough.

FREE'STONE, a hard and durable kind of gritstone, but finer sanded, and a smoother stone. It is called free, from its being of such a nature as to cut freely in any direction: such is the Portland-stone, and the freestone of Kent.

FREE'THINKER, one who rejects revelation; or, in plain language, a deist. *Freethinking*, in England, first appeared in the form of opposition to abuses in the church, which were attacked in the reign of James II. and William III. It possibly also originated in France from the same cause, but there it assailed all revealed religion; and it is more than probable, that to the example of those revilers of true religion, the pernicious tenets of the free-thinking or deistical school have latterly prevailed to such a frightful extent.

FREE'ZING, in philosophy, the conversion of a fluid body into a firm and solid mass by the action of cold. Upon the principle of the absorption of heat, are founded the various artificial methods of producing cold and congelation. The process of freezing may be artificially produced by means of the air pump, and sometimes by certain freezing mixtures, or compositions of such ingredients as when mixed with other bodies, cause them to congeal; such as snow and common salt, or muriate of ammonia, nitre and water, &c. Evaporation likewise produces cold. In Spain, a kind of earthern jars, called *buxaros*, is used, the earth of which is so porous, being only half-baked, that the outside is kept moist by the water that filters through it; and, though placed in the sun, the water in the jar becomes as cold as ice. It is a common practice in China, to cool wine or other liquors by wrapping a wet cloth round the bottle and hanging it up in the sun. The water in the cloth evaporates, and thus cold is produced. Ice may be produced at any time by the evaporation of ether. Water freezes when the air is 32°; wax solidifies at 150°; lead at 600°; mercury at 39° below zero.

FREIGHT, in navigation and commerce, the hire of a ship, or a part thereof, for the conveyance and carriage of goods from one place to another: or the sum agreed on between the owner and the merchant, for the hire and use of a vessel. In a more extended sense, it means the burden of such ship. Freight being the return made for the conveyance of goods or passengers to a particular destination, no claim arises for its payment in the event of a total loss; and our law authorities have decided, that in case of a total loss with salvage, the merchant may either take the part saved or abandon. But after the merchant has made his election, he must abide by it.

FRENCH CHALK, in mineralogy, a variety of indurated talc, in masses composed of small scales. It combines with grease, and is useful in drawing.

FRENCH-HORN', a musical wind instrument made of copper. It possesses a range of three octaves, and is capable of producing tones of great sweetness.

FRES'CO, a method of painting in distemper or size colours on walls, so as to endure the weather. It is performed with water colours on fresh plaster, so that the colours incorporating with it, and drying on the wall, become very durable. It is asserted that there are specimens of frescopainting extant of the time of Constantine the Great. It was long neglected, but began to revive in the 15th century; and though Michael Angelo and Raphael produced some noble specimens of the art, it fell into disrepute until the Germans in recent times took it up again.

FRET, in architecture, an ornament consisting of two lists or small fillets variously interlaced or interwoven, and running at parallel distances equal to their breadth. ——*Fret-work* is sometimes used to fill up and enrich flat empty spaces; but is mostly practised in roofs, which are fretted over with plaster-work.——*Fret*, in heraldry, a bearing composed of six bars, crossed and interlaced; by some called a *true lover's knot*. ——*Frets*, in music, certain short pieces of wire fixed on the finger-boards of guitars, &c. at right angles to the strings, and which, as the strings are brought into contact with them by the pressure of the fingers, serve to vary and determine the pitch of the tones. Formerly these frets or stops consisted of strings tied round the neck of the instrument.——*Fretts*, a term used by miners to express the worn sides of the banks of rivers in mine countries.

FRI'AR, (from the French *frere*, a brother), a term common to monks of all orders; there being a kind of fraternity, or brotherhood, between the several religious persons of the same monastery. Friars are generally distinguished into four principal branches, viz.: 1. Minors, gray friars or Franciscans; 2. Augustines; 3. Dominicans or black friars; 4. White friars or Carmelites.

FRICASSEE', a dish of food made by cutting chickens, rabbits, or other small animals into pieces, and dressing them in a frying-pan, or a like utensil.

FRIC'TION, in mechanics, the rubbing of the parts of engines and machines against each other, by which means a great part of the effect is destroyed. The causes of friction are, 1, the roughness of the contiguous surfaces; 2, the irregularity of the figure, which arises either from imperfect workmanship, or from the pressure of one body on another; 3, an adhesion, or attraction, which is more or less powerful according to

THE MOST POWERFUL MEANS OF ARTIFICIAL REFRIGERATION IS AFFORDED BY THE EVAPORATION OF LIQUEFIED CARBONIC ACID GAS.

THE FREEZING POINT DENOTES THE POINT OR DEGREE OF COLD, SHOWN BY A MERCURIAL THERMOMETER, AT WHICH CERTAIN FLUIDS BEGIN TO FREEZE.

the nature of the bodies in question; and 4, the interposition of extraneous bodies, such as moisture, dust, &c. It is found that the quantity of friction is always proportional to the weight of the rubbing body, and not to the quantity of surface; and that it increases with an increase of velocity, but is not proportional to the augmentation of celerity.—The resistance called *friction* performs important offices in nature and works of art. Were there no friction, all bodies on the surface of the earth would be clashing against one another; but at present whenever a body acquires a great velocity, it soon loses it by friction against the surface of the earth; the friction of water against the surfaces it runs over soon reduces the rapid torrent to a gentle stream; the fury of the tempest is lessened by the friction of the air on the face of the earth; and the violence of the ocean is subdued by the attrition of its own waters.——*Friction*, in medicine, the rubbing any part of the body with the hand, flesh-brush, flannel, or other substance, or with oils, liniments, &c., with a view to the preservation or restoration of health, and which is often found a most efficacious remedy.

FRI'DAY, the sixth day of the week, so called from Frea, or Friga, a goddess worshipped by the Saxons on this day.

FRIG'ATE, a ship of war, light built, and a good sailer. Frigates have two decks, and generally mount from twenty to forty-four guns.

FRIGATOON', a Venetian vessel built with a square stern, without any foremast: it is used in the Adriatic.

FRIEND'SHIP, a noble and virtuous attachment, between individuals, springing from a pure source: this is *true* friendship. *False* friendship may subsist between bad men, as between thieves—a temporary attachment springing from interest, which may change in a moment to enmity and rancour.

FRINGIL'LA, in ornithology, a comprehensive genus of birds, of the order *Passeres*, with the beak of a conic sharp-pointed figure, the two chaps of which mutually receive each other. To this genus belong the goldfinch, the chaffinch, greenfinch, yellow-hammer, canary-bird, linnet, sparrow, &c.

FRI''GID ZONES, in geography, the two zones or divisions of the earth, comprehended between the poles and the polar circles. They are the north frigid zone, at the north pole, and the south frigid zone, at the south pole. The frigid zone enjoys an atmospheric calm which is unknown in temperate regions: it has no storms, no hail, and scarcely a tempest; while the splendour of the aurora borealis, reflected by the snow, dispels the darkness of the polar night. The days, for several months, though of a monotonous magnificence, astonishingly accelerate the growth of vegetation. In three days, or rather, three times twenty-four hours, the snow is melted, and the flowers begin to blow.

FRIEZE, or FRIZE, in architecture, that part of the entablature between the architrave and cornice. It is usually enriched with figures of animals or other ornaments of sculpture.——A coarse kind of woollen cloth or stuff.

FRIT, or FRITT, in the glass manufacture, the matter or ingredients of which glass is to be made, after they have been calcined or baked in a furnace. It is of different kinds, according to the quality of the glass; but chiefly composed of silex and fixed alkali.

FRITH, an arm of the sea; or the opening of a river into the sea; as, the *frith* of Forth, the *frith* of Clyde, &c.——Among the Anglo-Saxons it signified a wood.

FRITH'GILD, in archæology, a guild-hall; also a company or fraternity.

FRITHSO'KEN, in law, a liberty of having frankpledge, or surety of defence.

FRITILLA'RIA, a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*. The species are bulbous: as, the crown-imperial, Persian lily, &c.

FROG, in zoology, an amphibious animal, of the genus *Rana*, with four legs, a naked body, and no tail. It is remarkable for swimming with rapidity, and for taking large leaps on land. Frogs remain in a torpid state during winter. Besides the common frog, there are a great many other species, the most singular of which is that called the *bull-frog*, a native of the northern parts of America, with four divided toes on the fore feet, and five webbed ones on the hinder. This animal, when the limbs are extended, measures nearly two feet; the trunk of its body being about eight inches long, and four or five in breadth. It is very voracious, and frequently swallows the young of water-fowl, before they have strength to shift for themselves. Its croaking is so loud as to resemble the roaring of a bull heard at a distance, whence its name. ——*Frog*, in farriery, the hard projecting substance in the hollow of a horse's foot.

FROND, in the Linnæan system of botany, a term for a kind of stem which has the branch united with the leaf, and frequently with the fructification.

FRONDES'CENCE, in botany, the precise time of the year and month in which each species of plant unfolds its leaves.

FRON'DOUS, in botany, an epithet for a flower which produces branches charged with both leaves and flowers.

FRONT, in perspective, a projection or representation of the face or forepart of an object, or of that part directly opposite to the eye, which is more usually called the orthography.

FRON'TAL, in architecture, a little pediment or front-piece over a small door or window.——In medicine, a preparation to be applied to the forehead.

FRONTA'LIS, in anatomy, an epithet for a muscle of the forehead, which serves to contract the eyebrows.

FRONT'ATED, in botany, an epithet for the leaf of a flower, which grows broader and broader, and perhaps terminates in a right line: it is used in opposition to *cus-*

THE FORCE REQUISITE TO MOVE A WHEEL-CARRIAGE ON A LEVEL ROAD, IS ABOUT ONE TWENTY-FIFTH OF THE LOAD. THE FORCE REQUISITE TO MOVE A WHEEL-CARRIAGE ON A LEVEL ROAD, IS ABOUT ONE TWENTY-FIFTH OF THE LOAD.

ACTION OR PARTING WITH MOTION BY ONE BODY, IS ALWAYS EQUAL TO THE REACTION OR RECEPTION OF IT BY ANOTHER.

pidated; that is, when the leaves of the flower end in a point.

FRONTIE'R, the border, confine, or extreme part of a kingdom or province, bordering on another country. Frontiers were anciently called marches.

FRONTINIAC', a species of French wine, named from the place in Languedoc where it is produced.

FRON'TIS OS, in anatomy, one of the bones of the skull which joins the bones of the sinciput and temples by the coronal suture.

FRON'TISPIECE, in architecture, the principal face of a building.——An ornamental engraving fronting the first page of a book.

FROST, in physics, that state of the natural world in which the atmosphere so absorbs the caloric from bodies on the surface of the globe, as to leave them, more or less, without fluidity or expansion. Water, like the earth, seems not disposed to receive any very intense degree of cold at a considerable depth or distance from the air; the vast masses of ice found in the northern seas being only many flakes and fragments, which, sliding under each other, are, by the congelation of the intercepted water, cemented together. But near the earth's surface the power of frost is immense: a freezing liquid will burst the strongest vessels in which it is enclosed; and in a severe frost the largest oaks are sometimes known to split.—Frost, being produced by contact with the atmosphere, naturally proceeds from the external parts of bodies inwards; so the longer a frost is continued, the thicker the ice becomes upon the water in ponds, and the deeper into the earth is the ground frozen.——*Hoar-frost* is the dew frozen or congealed early in cold mornings.

FRUCTES'CENCE, in botany, the precise time when the fruit of a plant arrives at maturity, and its seeds are dispersed.

FRUCTIFICA'TION, in botany, the temporary part of vegetables, appropriated to their propagation, consisting of the flower and the fruit.

FRUIT, in a general sense, signifies whatever the earth produces for the nourishment and support of animals; but in a more limited sense, the produce of a tree or other plant; as apples, pears, cherries, melons, &c. The structure and parts of different fruit differ in some things, but in all the species the essential parts of the fruit appear to be only continuations or expansions of those which are seen in the other parts of the tree; and the same fibres are continued to them from the root.

FRUMENTA'CEOUS, in botany, an epithet for plants that have their stalks pointed, and their leaves like reeds, bearing their seeds in ears, like corn.

FRUS'TUM, in mathematics, part of some solid body separated from the rest.——*Frustum of a Cone,* the part of a cone that remains when the top is cut off by a plane paraliel to the base; it is otherwise called a *truncated cone.*

FRUTES'CENT, in botany, an epithet for that which from herbaceous is becoming shrubby; as a *frutescent* stem.

FRU'TEX, in botany, a shrub; a plant having a woody durable stem, but less than a tree.

FU'CI, in botany, a genus of plants in the Linnæan system, comprehending most of those which are commonly called seaweeds, from which, when burnt, an impure alkali is procured called kelp.

FU'CUS, the name given by the ancients to a sea plant, from which a dye was procured for dyeing woollen and linen cloths.——*Fucus* is also the appellation of a paint, or composition applied on the face, to beautify it and heighten the complexion. The fucus of the Roman ladies was a kind of white earth or chalk, brought from Chio and Samos, dissolved in water.

FU'EL, any matter which serves to feed or maintain fire; as wood, coal, charcoal, peat, &c. From every combustible the heat is diffused either by radiation or direct communication to bodies in contact with the flame. In a *wood* fire the quantity of radiating heat is to that diffused by the air, as 1 to 3; or it is one fourth of the whole heating power. The radiating heat from *charcoal* fires constitutes one third of the whole emitted. The heating power of good *coke* is equal to nine-tenths of that of wood charcoal. And the radiating heat emitted by burning *pit-coal* is greater than that of charcoal. In many cases the hot air which passes into the flues or chimneys may be beneficially applied to heating, drying, roasting, &c.; but care ought to be taken that the draught of the fire be not thereby impaired, and an imperfect combustion of the fuel produced.

FU'GITIVE, in literature, short and occasional compositions either in poetry or prose; written in haste or at intervals, and considered to be fleeting and temporary.

FUGUE, in music, a species of composition, in which the different parts follow each other, each repeating in order what the first had performed.

FUL'CRUM, in mechanics, the prop or support by which a lever is sustained.——In botany, the part of a plant which serves to support or defend it.

FULGURA'TION, in the art of assaying, is a term by which the sudden brightening of the melted gold and silver in the *cupel* is designated, when the last film of vitreous lead and copper leaves the surface.

FULLER'S EARTH, a soft, friable mass of lithomarge clay, unctuous to the touch, and remarkable for the property of absorbing oil, wherefore it is used by fullers to take grease out of cloth. It is found in great abundance in Bedfordshire, Berkshire, Hampshire, Surry, and some other counties. In order to prepare it for the fuller's use, it is first baked, then thrown into cold water, where it falls into powder, and the separation of the coarse from the fine is accomplished by a simple method, called washing over.

FULL'ING, the art of cleansing, scour-

AS FRUITS RIPEN, THE ORIGINAL SECRETIONS UNDERGO A GREAT CHEMICAL CHANGE, WHICH IS VASTLY PROMOTED BY HEAT AND LIGHT.

IRON MERCURY IS FROZEN AT FORTY DEGREES BELOW ZERO THE SENSATION IS THE SAME AS THAT OF TOUCHING RED-HOT IRON.

EIGHT-AND-A-HALF PARTS OF GUNPOWDER EXPLODED BY A PERCUSSION CAP, HAVE AN EQUAL FORCE WITH TEN EXPLODED BY A FLINT LOCK.

ing, and pressing cloths, to make them stronger, closer, and firmer, which is done by means of a water mill, called a fulling or scouring mill.

FUL'MAR, in ornithology, a fowl of the genus *Procellaria*, or petrel kind, larger than a gull, possessing the singular faculty of spouting from its bill a quantity of pure oil against its adversary. It inhabits the Hebrides, and feeds on the fat of whales.

FULMINA'TION, in chemistry, explosion or detonation, accompanied with a very considerable degree of sound. All these equally imply rapid decomposition with or without flame, and the intensity of sound alone distinguishes the idea of *fulmination* from those of *detonation* and *explosion*:——*Fulmination* is also used for the denunciation, or execution of a sentence of anathema; as the *fulminations* of the Vatican.

FUL'MINATING POWDER, a powder that explodes upon the application of certain degrees of heat, with instantaneous combustion, and prodigious sound. These are sometimes made with metals, and sometimes without; as, for instance, the fulminating powder, which is made of nitre, potash, and the flowers of sulphur, triturated in a warm mortar. If this powder be fused in a ladle, and then set on fire, it will explode with a noise like thunder. If a solution of gold be precipitated by ammonia, the product will be fulminating gold, a grain of which, if held over a flame, will explode with a sharp loud noise. But of all these explosive compounds, that which in a manufacturing point of view is the most useful, is the fulminate of mercury, now so extensively used as a priming to the caps of percussion locks.

FULMIN'IC ACID, in chemistry, the explosive constituent of fulminating mercury and fulminating silver, being generated by the reaction of alcohol and the acid nitrates of these metals. All attempts to insulate fulminic acid have proved unsuccessful, as it explodes with the slightest decomposing force.

FUMIGA'TION, a process by means of which the nitrous and other mineral acids, in a state of vapour, are dispersed through any place, in order to purify apartments, goods, or articles of apparel supposed to be imbued with some infectious or contagious poison or fumes. The most effectual agents for this purpose are chlorine gas, muriatic acid gas, or nitric acid vapour.

FUNC'TION, any office, duty, or employment belonging to a particular station or character; as, the *functions* of a judge, a bishop, &c.——*Functions*, applied to the actions of the body, are divided into vital, animal and natural. The *vital* functions are those necessary to life, and without which the individual cannot subsist; as the motion of the heart, lungs, &c. The *natural* functions are such as we cannot subsist any considerable time without; as the digestion of the aliment, and its conversion into blood. Under animal functions are included the senses of touching, tasting, &c. memory, judgment, and voluntary motion, without any of which an animal may be said to exist, though under great privations. In short, all parts of the body have their own functions, or actions peculiar to themselves. Life consists in the exercise of these functions, and health in the free and ready exercise of them.——*Function*, in algebra, denotes any compound quantity; and when one of the component quantities is variable, it is said to be a variable function.

FUNDS, a term adopted by those who speak of the public revenue of nations, to signify the several taxes that have been laid upon commodities, either by way of duties of custom, or excise, or in any other manner, to supply the exigencies of the state, and to pay interest for what sums it may have occasion to borrow.——The capital stock of a banking institution, or the joint stock of a commercial or manufacturing house, constitutes its *funds;* and hence the word is applied to the money which an individual may possess, or the means he can employ for carrying on any enterprise or operation.——The *Funding system* commenced in England shortly after the Revolution of 1688, and as the sums were at first borrowed for short periods, and partially repaid, the first transaction which assumed the character of a permanent loan was when, at the establishment of the Bank of England, in 1693, its capital, then amounting to 1,200,000*l.*, was advanced to the government.——A *sinking fund* is a sum of money appropriated to the payment of the public stock, or the payment of the public debt.

FU'NERAL RITES, ceremonies accompanying the interment or burial of any person. These rites differed among the ancients according to the different genius and religion of each country. The ancient Christians testified their abhorrence of the pagan custom of burning the dead; and always deposited the body entire in the ground; and it was usual to bestow the honour of embalming upon the martyrs, at least, if not upon others.

FU'NERAL GAMES. The celebration of these games among the Greeks, mostly consisted of horse-races: the prizes were of different sorts and value, according to the quality and magnificence of the person that celebrated them. The garlands, given to victors on this occasion, were usually of parsley, which was thought to have some particular relation to the dead. Among the Romans, the funeral games consisted chiefly of processions; but sometimes also of mortal combats of gladiators, around the funeral pile.

FUN'GATE, in chemistry, a compound of fungic acid and a base.

FUN'GIC ACID, in chemistry, an acid obtained from mushrooms.

FUN'GIN, the fleshy part of mushrooms, now considered as a peculiar vegetable principle.

FUN'GITE, a kind of fossil coral.

FUN'GIFORM, in mineralogy, having a termination similar to the head of a fungus.

ALL REAL MUSHROOMS HAVE A PLEASANT TASTE, AND MAY THEREBY BE DISTINGUISHED FROM ANY KIND OF FUNGUS THAT IS POISONOUS.

FUN'GUS, in botany, an order of vegetables, belonging to the *cryptogamia* class of Linnæus. The fungi have so little of the common and general appearance of vegetables, that many have denied them to be such, and contended for their being only excrementitious matter, protruded from decaying vegetables of other kinds. The word is also applied to excrescences on plants.——In surgery, the term *fungus* is applied to any morbid excrescence, whether in wounds or arising spontaneously.

FUR'LONG, a long measure, equal to 1-8th of a mile, or forty poles. It is also used in some law-books, for the eighth part of an acre.

FUR'LOUGH, leave granted to a non-commissioned officer or soldier to be absent for a given time from his regiment.

FUR'NACE, an apparatus for melting metals, &c., variously constructed, according to the nature of the substance which is to be heated or rendered liquid by fusion. It must of course be capable of transferring great heat to bodies, and consist of a suitable fire-place, and receptacles to contain the articles to be operated upon; and sometimes supplied with a dome, so as to reverberate the heat and flame. In the smelting of some ores, several different kinds of furnaces are necessary; in the copper works, for instance, there is the calcining, the melting, the roasting, the refining, and the igniting furnaces.

FUSEE', a small tube, filled with combustible materials, by which fire is communicated to the powder in a bomb; but as its contents burn slowly, time is given before the charge takes fire, for the bomb to reach its destination. *Fusee* was also till lately used for a small neat firelock; but *fusil* is the more modern word.——*Fusee*, the cylinder round which the chain of a clock, watch, or jack, is wound.

FU'SION, the liquefaction of a solid body by means of heat; as in the case of metals, glass, and similar bodies. Those substances which admit of being fused are termed *fusible*, but those which resist the action of fire or heat are termed *refractory*. ——*Watery fusion*, the melting of certain crystals by heat in their own water of crystalization.

FUSILEER', a soldier belonging to what is termed the light infantry: they were formerly armed with a *fusil;* but they are not now so distinguished, their muskets being like the rest.

FUSTIAN, a kind of coarse thick twilled cotton, which is generally dyed of an olive, leaden, or other dark colour.—— In literature, an inflated style of writing, in which high-sounding and bombastic terms are used, instead of such as are natural, simple, and suited to the subject.

FUS'TIC, the wood of a species of mulberry (*Morus tinctoria*), a large tree growing in most parts of South America, in the United States, and the West India islands. It is very extensively used as an ingredient in the dyeing of yellow; for which purpose large quantities of it are annually imported. There is another kind, called Zante, or *young* fustic, which is a small shrub, of the sumach species. This imparts a beautiful bright yellow dye to cottons, &c., which, when proper mordants are used, is very permanent.

G.

G, the seventh letter in the English alphabet; but in the Greek, and all the oriental languages, it occupies the third place. It is a mute, and cannot be sounded without the assistance of a vowel. It has a hard and a soft sound, as in *game*, and *gesture;* and in many words, as in *sign, reign*, &c. the sound is not perceived. As a numeral it formerly stood for 400, and with a dash over it, for 400,000. G, in music, is the nominal of the fifth note in the natural diatonic scale of C, and to which Guido applied the monosyllable *sol*. It is also one of the names of the highest cliff.

GA'BIONS, in fortification, baskets made of ozier-twigs, of a cylindrical form, six feet high, and four wide; which, being filled with earth, serve as a shelter from the enemy's fire.

GAB'RONITE, in mineralogy, a yellowish stony substance, distinguished by the large quantity of soda it contains.

GAD, among miners, a small punch of iron, with a long wooden handle, used to break up the ore.

GAD'FLY, an insect of the genus *Œstrus*, which deposits its eggs on the backs of horses and other cattle. It is sometimes called the *breeze*.

GAD'OLINITE, a mineral, usually found in amorphous masses, and having the appearance of vitreous lava. It contains a new earth, called *yttria*.

GA'DUS, in ichthyology, the Cod-fish. There are 23 species of this genus, the most important is the Gadus morhua, or common cod, which inhabits the northern seas of Europe and America, in innumerable shoals.

GAE'LIC, or ERSE, is the name of that dialect in the ancient Celtic language, which is spoken in the Highlands of Scotland. It is a generally received opinion, that the Celtic, at the time of the Roman invasion, was universally spoken over the

THE ROMANS BUILT THEIR IRON FURNACES ON HIGH HILLS, THAT THE FORCE OF THE WIND MIGHT SERVE IN LIEU OF BELLOWS.

SOME YEARS AGO A CHAPEL WAS OPENED IN LONDON FOR THE PERFORMANCE OF DIVINE WORSHIP IN THE GAELIC TONGUE.

west of Europe; for, although divided into a variety of dialects, yet they all show the clearest proofs of a common origin. The Gaelic, which, from a variety of causes, has retained much of its original purity, is bold, expressive, and copious. It derives no assistance from the languages either of Greece or Rome, from which it differs in its structure and formation. More than two-thirds of the names of places in Great Britain and Ireland are of Celtic origin, which, if other proofs were wanting, would establish the fact of its once having been the language of the country.

GAFF, in nautical language, a sort of boom or pole, used to extend the upper edge of the sails, as in the main-sail of a sloop, &c.

GAGE, or GAUGE, an instrument for ascertaining measures of different kinds; as, a *sliding-gage*, used by mathematical instrument makers for measuring and setting off distances; a *wind-gage*, an instrument for measuring the force of the wind on any given surface; a *tide-gage*, for determining the heights of tides; and various others.

GAIL'LIARDE, an ancient Italian dance, of a sportive character and lively movement. It was sometimes called *Romanesque*, because it was said to have come originally from Rome.

GAL'ACTIN, in chemistry, that which constitutes the principal substance in the sap of the cow-tree, or *galactrodendon utile* of South America, where it is used as a substitute for cream. The sap, on standing, throws up a white matter, which, after being well washed, and dried *in vacuo*, over sulphuric acid, constitutes galactin. It is yellow, translucent, brittle, has a resinous appearance, and is tasteless.——The cow-tree of Guiana produces a glutinous, milky fluid, like an animal. It frequently grows upon the sides of a rock, and has dry coriaceous leaves. For several months of the year, its foliage is not moistened by a single shower of rain, and its branches appear entirely dried up; but, upon piercing the trunk, particularly at the rising of the sun, there flows a sweet and nourishing yellow juice, having a balsamic perfume, with many of the qualities of milk. In the morning, the natives of the country in which this vegetable fountain grows, visit it with bowls, in which they carry home its milk for their children: so that this tree, says Humboldt, seems to present the picture of a shepherd, distributing the milk of his flock. Akin to this, is a milk tree called Hya-hya, in Demerara, which is described by Mr. Smith, its European discoverer, to yield a copious stream of thick, rich, milky fluid, destitute of all acrimony, and only leaving a slight clamminess upon the lips. A tree which was felled on the banks of a small stream, had completely whitened the water in an hour or two. Dr. Christison finds the milk to consist of a small portion of caoutchouc, and a large proportion of a substance possessing in some respects peculiar properties, which appear to place it intermediate between caoutchouc and the resins: its nutritive qualities are therefore extremely slight, or at least very questionable.

GALAC'TITE, a fossil substance resembling French chalk in many respects, but when immersed or triturated in water, having the colour of milk.

GALACTOM'ETER, or LACTOM'ETER, an instrument for ascertaining the quality of milk.

GAL'AXY, in astronomy, the *Via Lactea*, or *Milky Way;* a long, white, luminous track, which seems to encompass the heavens like a girdle; forming nearly a great circle of the celestial sphere. This, like every other phenomenon of nature, has supplied the poet with many a fantastic, and many a beautiful dream. The invention of the telescope has confirmed the conjecture of science, that it consists in a multitude of stars, too remote to be separately distinguished by the naked eye. Dr. Herschel says, that in the most crowded part of the Milky Way he has had fields of view that contained no less than 588 stars, and these were continued for many minutes, so that, in a quarter of an hour, he has seen 116,000 stars pass through the field of view of a telescope of only 15′ aperture; and at another time, in forty-one minutes, he saw 258,000 stars pass through the field of his telescope.

GAL'BANUM, in medicine, the concrete juice of the *Bubon galbaniferum*, a shrubby plant, belonging to the natural order *Umbelliferæ*, and is usually imported from Syria, Persia, and the East-Indies. This gum-resin comes in large, soft, ductile masses, of a whitish colour, and possessing an acrid, bitter taste, with a disagreeable odour. In its medicinal properties, it is intermediate between ammoniac and asafœtida.

GALE'NA, in mineralogy, the sulphuret of lead, found both in masses and crystallized. It occurs in primitive and transition mountains, but is more frequently found in secondary rocks, especially in compact limestone. It constitutes beds and veins; and is found more or less in every country: in England it is very abundant; and it is also widely dispersed over the United States of America. Most of the lead of commerce is obtained from galena, and usually contains a little silver. [See LEAD.]

GALEN'IC, in medicine, that manner of proceeding in medicine which is founded upon the principles of Galen, or which that physician introduced. —— *Galenical medicines*, those that are formed by the easier preparations of vegetables; as by infusion, or decoction, or by combining and multiplying ingredients; while the *chemical*, to which they are opposed, are those produced by extracting the more intimate and remote virtues by means of fire and elaborate preparations, as calcination, digestion, fermentation, &c.

GALL, in natural history, a protuberance or tumour produced by the puncture of in-

sects, on plants and trees of various kinds, but more particularly on the oak.——GALL-FLY. There are a multitude of insects which form these excrescences, the principal of which is the *cynips*. Like others of the genus, the female pierces a branch, and deposits an egg in the interior, around which, in the course of a few days, an excrescence is thrown out, affording nourishment to the young insect, and protecting it from external injury until it has attained its full size, when after having undergone metamorphoses, it penetrates the sides of the excrescence, and comes out into the open air.

GALL'-BLADDER, a membrane situated in the concave side of the liver, the use of which is to collect the bile, first secreted in the liver, and mixing it with its own peculiar produce to perfect it farther, to retain it together a certain time, and then expel it.

GALL'-STONES, calculous concretions frequently formed in the gall-bladder, and sometimes occasioning great pain in their passage through the ducts into the *duodenum*, before they are evacuated.

GALLEON', vessels of war formerly used by the Spaniards and Portuguese. In more recent times, those vessels were called *galleons*, in which the Spaniards transported treasure from their American colonies.

GAL'LERY, in architecture, a long, narrow room, the width of which is at least three times less than its length; by which proportion it is distinguished from a *saloon*. Corridors are sometimes also called *galleries*.——*Galleries* are generally decorated with pictures in oil or fresco: hence a large collection of pictures, even if contained in several adjoining rooms, is called a *gallery*.——*Gallery*, in fortification, a covered walk across a ditch in a besieged town, made of strong planks and covered with earth. It was formerly used for carrying a mine to the foot of the ramparts.——*Gallery (of a mine)*, a narrow passage, or branch of a mine carried on underground to a work designed to be blown up.——*Gallery (in a ship)*, a balcony, projecting from the stern of a ship of war, or of a large merchantman.

GAL'LEY, a kind of low, flat-built vessel, furnished with one deck, and navigated with sails and oars, particularly in the Mediterranean.——An open boat used on the Thames by custom-house officers, &c.——The cook-room or kitchen of a ship of war.——The war-galleys, or *naves longæ*, of the Romans, were variously named from their rows or banks of oars.——*Galley slave*, a person condemned to work at the oar on board a galley, being chained to the deck.——In France, the *galleys* resemble the *hulks* of Great Britain, in which the convicts labour and are confined.

GAL'LIC ACID, in chemistry, the peculiar acid extracted from gall-nuts. It is slightly acidulous and styptic to the taste, inodorous, crystalizing in white silky needles, and soluble in boiling water or alcohol. Its principal constituents are carbon and oxygen.—When an infusion of galls is dropped into a solution of sulphate of iron, it produces a deep purple precipitate, which is a very long time in subsiding. It becomes black by exposure to the air; and in writing ink, this precipitate is retained in suspension by mucilage.

GAL'LICAN, any thing belonging to France: thus the term gallican church denotes the church of France, or the assembly of the clergy of that kingdom.

GAL'LICISM, an idiom or phrase of the French language, introduced in speaking or writing another language.

GALLI'NÆ, in ornithology, the fifth order of birds, under which are comprehended the peacock, pheasant, turkey, partridge, grouse, the domestic cock, &c.

GAL'LIOT, a small galley or Dutch vessel, carrying a main and mizen-mast, and a large gaff-main-sail; built very slightly, and designed only for chase. It can both sail and row, and has sixteen or twenty oars. All the seamen on board are soldiers, and each has a musket by him on quitting his oar.

GALLINA'CEOUS, an appellation given to the birds of the order *Gallinæ*.

GAL'LON, a measure of capacity both for dry goods and liquids, containing four quarts.

GALLOON', a narrow thick kind of ferret, or lace, used to edge or border cloths.

GAL'LOP, the swiftest pace of a horse, which is made by springs or leaps; but it may also be a moderate pace, at the pleasure of the rider.

GALLOPA'DE, in the manege, a sidelong or curveting kind of gallop. Also the term for a sprightly and active kind of dance.

GAL'LY, in printing, a wooden or metal frame, into which the compositor empties the lines out of his *composing-stick*, and in which he ties up the page when it is completed.

GAL'VANISM, the development of electrical phenomena without the aid of friction, and in which a chemical action takes place between certain bodies. It derived its name from Galvani, a professor at Bologna, who, in a course of experiments on animal irritability, observed the first striking phenomena which led to its discovery. It occurred in the following manner:—One of his assistants happened to bring the point of his scalpel to the crural nerves of a skinned frog lying near the conductor, upon which the muscles of the limb were agitated with strong convulsions. After this, he continued his experiments in various ways, and ascertained that the mere agency of metallic substances, provided they were dissimilar metals, would produce such convulsions. This subject engaged the attention of experimentalists both before and after the death of M. Galvani, which happened in 1798; but none added any thing materially to his discovery except M. Volta, who repeated the experiments of the former, and found that when two pieces of metal of dif-

THE DIFFERENCE BETWEEN ELECTRICITY AND GALVANISM ARISES MERELY FROM THE BREADTH OF THE STRATA OF THE ELECTRIC CURRENT.

ferent kinds were placed in different parts of an animal, and were either brought into contact or into connexion by means of a metallic arc, convulsions ensued every time, and that this effect was strongest when the metals were zinc and silver, particularly when several pairs of metals were employed, having pieces of moist cloth between them. This led him to the idea of constructing a battery, for the purpose of accumulating electricity, which has since been called the galvanic battery, or voltaic pile. Several improvements upon the voltaic pile were soon made by other philosophers; and the discoveries in galvanism multiplied with a rapidity, and to an extent, surpassing any thing before known in the history of science.—Though it is impossible to do more than give a feeble outline of the discoveries in galvanism in our confined limits, we may still be able to allude to the principal of them. We begin by observing, that the simple contact of different conducting bodies is all that is necessary for the excitement of galvanic electricity. 1. The least complicated galvanic arrangement is termed *a simple galvanic circle*. It consists of three conductors; of which one, at least, must be solid, the second fluid, and the third may be either solid or fluid. This is possessed but of feeble powers, yet they are often sufficiently obvious. 2. *Compound galvanic circles*, or *galvanic batteries*, are formed by multiplying those arrangements which compose simple circles. Thus, if slates of zinc and of silver, and pieces of woollen cloth of the same size as the plates, and moistened with water, be piled upon each other in the order of zinc, silver, and cloth, and these, repeated twenty or thirty times, we have the voltaic pile, the power of which is sufficient to give a smart shock; which shock may be renewed at pleasure, until after a few hours, when the activity of the pile begins to abate, and finally ceases altogether. But the galvanic apparatus, by far the most convenient, and generally used, was invented by Mr. Cruickshank. This is called the *galvanic trough*, which has the advantage of being more easily put in action than the pile, and, as it contains more liquid, can be longer continued in action, and is more energetic. For ordinary experiments, a trough containing fifty pairs of plates, four inches square, is sufficient. In those cases where a greater power is wanted, it may be commanded by uniting the power of several such troughs through the union of the zinc end of one trough with the copper end of another, by a metallic slip or wire. The battery of the Royal Institution, with which Sir Humphry Davy made his great discoveries, is composed of 2000 pairs of plates, each plate having thirty-two square inches of surface. But various improvements and modifications of this battery have been invented by Dr. Wollaston, Mr. Children, and others. The size of the plates composing the galvanic series have been varied from one or two inches square to that of a great number of feet. The battery of Mr. Children consisted of twenty pairs of copper and zinc plates, each plate being six feet long by two feet eight inches broad.——*Chemical Effects of Galvanism.* The most simple chemical effect of the galvanic battery is the ignition and fusion of metals; the facility of being ignited, in the different metals, being inversely proportional to their power of conducting heat. Hence platina, which has the lowest conducting power, is most easily ignited; and silver, which conducts heat with greater facility than any other metal, is ignited with more difficulty than any of the rest. The most striking effect of the voltaic battery, however, is the intense light which is produced by placing two pieces of charcoal, cut into the shape of pointed pencils, at the two ends of the wires of an interrupted circuit. When the battery is a very powerful one, and the charcoal points are brought within the thirtieth or fortieth of an inch of each other, a bright spark is produced. By withdrawing the points from each other, a constant discharge takes place, through the heated air, in a space from one to four or more inches, according to the energy of the apparatus, producing a most brilliant arch of light, of considerable breadth, and in the form of a double cone. Platina introduced into this arch melts as wax does in the flame of a candle; and the light equals the brilliancy of the sun. But the most important chemical effect of galvanism is that of producing decomposition. The substance first decomposed by it was water. When two gold or platina wires are connected with the opposite poles of a battery, and their free extremities are plunged into the same cup of water, but without touching each other, hydrogen gas is disengaged at the negative wire, and oxygen at the positive side. By collecting the gases in separate tubes as they are formed, they are found to be quite pure, and in the exact proportion of two measures of hydrogen to one of oxygen. In decomposing water or any other compound, the same constituent principle is always disengaged on the same side of the battery; so that the principles which collect around each pole have a certain analogy; inflammable bodies, alkalies, and earths, go to the negative side, while oxygen and acids go more to the positive side. It is also found, that not only are the elements of a compound fluid separated by galvanic energy, to the opposite wires in distant parts of the containing vessel, without the movement of these elements being perceptible, but that the elements may even be evolved in separate portions of the fluid placed in distinct vessels, and connected only by some slight link, as a few fibres of moist cotton or amianthus. Many phenomena, indeed, still more extraordinary, present themselves in connexion with these interesting experiments. The elements of compound bodies are actually conveyed, by the influence of the electric current, through solutions of substances, on which, under other circumstances, they

VEGETABLES ARE BELIEVED TO DERIVE THEIR SUPPORT, BY A GALVANIC PROCESS, AS MUCH FROM THE ATMOSPHERE AS FROM THE SOIL.

BY THE STATUTE OF 25 GEO. III. CERTIFICATES ARE GRANTED FOR KILLING GAME, AND PENALTIES ENFORCED FOR VIOLATION OF THE ACT.

GAMBOGE IS SOMETIMES USED BY CONFECTIONERS TO COLOUR THEIR LIQUEURS, BUT IT IS A PRACTICE MUCH TO BE REPREHENDED.

would have exerted an immediate and powerful chemical action, without any such effect being produced. Acids, for example, may be transmitted from one cup, connected with the negative pole, to another cup on the opposite or positive side, through a portion of fluid in an intermediate cup tinged with any of the vegetable coloured infusions, which are instantly reddened by the presence of an acid, without occasioning the slightest change of colour. The same happens also with alkalies. Not only liquids, but solid substances, are decomposed by means of the galvanic energy, and their elements transferred to the opposite wires. And such is the force of this agent, that the most minute portion of a substance thus acted on by either of the wires is collected around it. From these researches, then, the general law is established, that when compounds are placed in the galvanic circuit, their elements are separated from the state of combination in which they exist, and, according to their peculiar nature, are collected, — some around the positive, others around the negative pole; but whether this is effected by attractions, repulsions, or by both, is not yet satisfactorily ascertained. In conclusion, we may observe, that the subject is continually engaging the attention of the scientific world, and that the theory and practice of galvanism must of necessity become more and more completely understood.—[*See* ELECTRICITY, MAGNETISM, and VOLTAIC ELECTRICITY.]

GALVANOM'ETER, an instrument or apparatus for measuring minute quantities of electricity, or the operations of galvanism.

GAMBO'GE, a gum-resin, being the inspissated juice of the *Garcinia gambogia*, a large tree growing in the East Indies, Ceylon, &c. It is obtained in commerce in masses of a dull orange colour, possessing no smell, and a slightly acrid taste; and affords a beautiful yellow colour, much used by painters. Its medicinal properties are violently cathartic.

GAME, all sorts of birds and beasts that are objects of the chase.——*Game Laws.* In England laws have been enacted to secure to certain privileged classes the right of hunting and shooting wild birds and animals, and preventing their being destroyed, or sold in the market; and it is believed that nothing has been so fertile a source of crime, among the lower orders, as these enactments. The game laws are justified upon the assumption, that beasts of the chase and game are a sort of unappropriated chattels, and so belong to the crown; and, accordingly, that it is no infringement of the right of any subject to grant to other subjects the privilege of killing them. Another reason which has been urged in favour of these laws, is the preservation of game; but this may be as effectually done by prohibiting all persons from destroying game at certain seasons of the year. By a recent enactment, however, for licensing the sale of game, some of the principal objections to the game laws have been obviated.

GAMES, in antiquity, were public diversions, or contests, exhibited on certain occasions, as spectacles for the gratification of the people. Such, among the Greeks, were the Olympic, Pythian, Isthmian, and Nemæan games; and, among the Romans, the Apollinarian, Circensian, Capitoline, &c. The Romans had three sorts of games, viz. sacred, honorary, and ludicrous. The first were instituted in honour of some deity or hero; the second were those exhibited by private persons, to please the people; as the combats of gladiators, the scenic games, and other amphitheatrical sports. The ludicrous games were much of the same nature with the games of exercise and hazard among us: such were the *ludus Trojanus*, *tesseræ*, &c. By a decree of the Roman senate, it was enacted, that the public games should be consecrated, and united with the worship of the gods as a part thereof; whence it appears, that feasts, sacrifices, and games, made up the greatest part, or rather the whole, of the external worship offered by the Romans to their deities.

GAM'UT, or GAM'MUT, in music, the table or scale of notes laid down by Guido, and marked by the monosyllables ut, re, mi, fa, sol, la; also the first note in the scale.

GANG, in seaman's language, a select number of a ship's crew appointed on any particular service.

GANG'LION, in surgery, a hard movable tumour, in the external or internal part of the carpus, upon the tendons or ligaments in that part, usually unattended with pain.——In anatomy, a small circumscribed tumour, found in certain parts of the nervous system.

GAN'GRENE, in medicine, the first stage of mortification, before the life of the part is completely extinct: when the part is completely dead, it is termed *sphacelus*.

GANGUE, in mining, the earthy, stony, saline, or combustible substance, which contains the ore of metals, or is only mingled with it, without being chemically combined.

GANG'WAY, among seamen, the name of several ways or passages from one part of a ship to another; but it is especially applied to a range of planks laid horizontally along the upper part of a ship's side from the quarter-deck to the forecastle; it is fenced on the outside by iron stanchions, and ropes, rails, or netting.——*To bring up to the gangway*, is to punish a sailor by seizing and there flogging him.

GAN'NET, in ornithology, the Solan Goose, a fowl of the genus *Pelicanus*, with a straight bill, about six inches long, and palmated feet. These fowls frequent the isles of Scotland in summer, where they feed on herrings and other fish. They migrate to the southward in the winter, and appear on the coast of Portugal; but in the breeding season they are found in immense numbers in the Orkneys, and in some

parts they form the chief food of the inhabitants.

GANTLET, or GAUNTLET, a large kind of glove, made of iron, and the fingers covered with small plates, formerly worn by cavaliers, armed at all points.——*To throw the Gantlet*, is a proverbial phrase, signifying to challenge or defy. The expression derives its origin from the days of chivalry, when he that challenged an opponent in the lists threw down his glove, and he that accepted the challenge took it up.

GANTLOPE, or GANTLET, in military affairs, an old punishment in which the criminal, running between the ranks, received a lash from every man. A similar punishment is used on board of ships; but it is seldom inflicted, except for such crimes as are calculated to excite general antipathy among the seamen.

GARNET, in mineralogy, a precious stone of great beauty, usually occurring in crystals more or less regular, and having numerous sides. Its predominating forms are rhomboidal, dodecahedron, and the trapezohedron; its prevailing colour is red of various shades, but often brown, and sometimes green, yellow, or black. *Precious Garnet* is always red, and its crystals are found imbedded in various forms. Fine specimens are found in Ceylon, Pegu, Brazil, &c. The term *oriental* sometimes applied to this variety, indicates not a locality, but merely a great degree of perfection. Garnets are usually disseminated, and occur in all the primitive strata from gneiss to clay slate. In some parts of Germany garnets are so abundant as to be used as fluxes to iron ores; in others, the garnet gravel is washed, pounded, and employed as a substitute for emery. The several varieties have the names of the *precious* or *oriental*, the *pyrope*, the *topazolite*, the *melanite*, the *grossular*, the *pyreneite*, and the *colophonite*.

GAOL DELIVERY, a term in law for the clearing of a prison by a judicial condemnation or acquittal of the prisoners; also a commission from the king to deliver or clear the gaols.

GARDENING, that branch of cultivation which teaches us how to dispose fruit-trees, flowers, and herbs, to the best advantage, whether for profit or pleasure; and directs us how to prepare the soil for sowing the different kinds of seeds, as well as how to treat the plants, during their various stages of vegetation, till they repay our care by the produce they yield when arrived at maturity. The general disposition of a garden, and of its parts, ought to be accommodated to the different situations of the ground, to humour its inequalities, to proportion the number and sorts of trees and shrubs to each part, and to shut out from the view of the garden no objects that may become ornamental. We read of the "hanging gardens" and embowered grottoes of ancient times, and of Pliny's Tuscan villa, during the luxurious era of Roman greatness: but it is clear, that whatever the art of gardening had produced among them, was, with every other trace of refinement, swept away by the barbarians who devastated Italy. The Troubadours of the middle ages speak of symmetrical gardens; yet, though they may have been very agreeable places, we have no reason to suppose them to have exhibited much of the skill of the scientific gardener. At a later period a new taste in gardening prevailed, which had its origin in France. Regularity was carried to excess; clipped hedges, alleys laid out in straight lines, flower-beds tortured into fantastic shapes, trees cut into the form of pyramids, birds, animals, &c. were the order of the day. The Dutch imitated the French, and the English soon after adopted the unnatural fashion; but to their credit be it remembered, the English were the first who felt the absurdity of this style, and the first to abolish it. But in reforming this petty, cramped, and unnatural character, we fell into the opposite extreme; for every appearance of regularity was rejected as hurtful to the beauty of nature, and it was forgotten, that if in a garden we want nothing but nature, we had better leave gardening altogether. The true style of gardening lies between the two extremes. A gardener ought to study nature, to learn from her the principles and elements of beauty, as the painter is obliged to do; but it is by no means a reproach to a garden, that it shows the traces of art.——In Mr. Repton's work on "Landscape Gardening and Landscape Architecture," lately edited by Mr. Loudon, are the following pertinent observations relative to the improved taste which, during the last century, has been manifested in the residences and domains of the English aristocracy. Having spoken of the quadrangular courts, surrounded by lofty walls, &c. which formerly met the view, and were considered as necessary appendages to the mansions of the great, he says, "It is now acknowledged that gloom is not necessary to magnificence, that liberty is not incompatible with greatness, and that convenience is not the sole object of ornament; for though such things as are useful may occasionally be ornamental, it does not follow that ornaments must always be useful; on the contrary, many of those productions of the polite arts which are most admired, are now merely considered ornaments, without any reference to their original uses. This is confessedly the case with works of painting and sculpture (except in that inferior branch of each which relates to portraits), for whatever might be the original uses of pictures or statues, they are now only considered as ornaments, which, by their number and excellence, distinguish the taste, the wealth, and dignity of their possessors. To use these internal marks of distinction only, might be prudent in those countries where it would be dangerous to display any external ornaments of grandeur; but rank and affluence are not crimes in England; on the contrary, we expect to see a marked

difference in the style, the equipage, and the mansions of wealthy individuals; and this difference must also be extended to the grounds in the neighbourhood of their mansions, since congruity of style and unity of character are amongst the first principles of good taste."

GAR'-FISH, or SEA-NEEDLE, in ichthyology, a long, slender fish, with a flat head, projecting forward into a very long, sharp snout. The sides and belly are of a bright silvery colour, the back is green, and the lower jaw projects considerably beyond the upper. It makes its appearance on the English coast just previous to the arrival of the mackerel, whose taste it resembles.

GAR'LIC, a plant of the genus *Allium*, having a bulbous root, consisting of many small tubercles included in its coats. It has a strong smell and an acrid taste, but is much used for food.

GAR'TER (ORDER OF THE), a military order of knighthood, said to have been first instituted by Richard I. at the siege of Acre, where he caused twenty-six knights, who firmly stood by him, to wear thongs of blue leather about their legs. It is also understood to have been perfected by Edward III., and to have received some alterations, which were afterwards laid aside, from Edward VI.; but the number of knights remained as at first established, till the year 1786, when it was increased to thirty-two. This order is never conferred but upon persons of the highest rank. The habit and ensigns of this order are the garter, mantle, cap, and collar. The badge of the order is the image of Saint George, called the George; and the motto is *Honi soit qui mal y pense*, or "Evil to him that evil thinks hereof." A vulgar story (says Hume) prevails, but is not supported by any ancient authority, that, at a court ball, Edward the Third's mistress, commonly supposed to be the countess of Salisbury, dropped her garter; and the king, taking it up, observed some of the courtiers to smile, as if they thought he had not obtained this favour by accident; upon which he called out *Honi soit qui mal y pense*.

GAS, a general term employed in chemistry to express all permanently elastic aerial fluids, whether produced by chemical experiments, or evolved in natural processes; but it does not include those aerial substances which arise from water, ether, &c., on the application of heat, because they are readily condensed into their respective fluids again, by a certain reduction of temperature, whereas the gases retain their elasticity in every variation of the temperature and pressure of the atmosphere. Every gas, in fact, consists of some ponderable base or substance, which is maintained in its aeriform state by means of heat or caloric; and each has its distinguishing characters constituting its base. Each kind of gas has also its own peculiar and uniform specific gravity, or weight, although they are all several hundred times lighter than water. They possess many extraordinary properties, and play an important part in almost all chemical, and in many natural phenomena; on which account we will briefly describe some of the most remarkable:—1. If a quantity of common *atmospheric air* is enclosed in an inverted glass over mercury, and burning phosphorus is introduced into it, and its introduction repeated till it ceases to burn, it is found, upon measurement, that the portion of air enclosed in the glass is diminished twenty-one parts in the hundred, while seventy-nine remain; and this residue will not support combustion, or maintain animal life, for fire goes out, and animals are suffocated by being placed in it. These twenty-one parts consist of a peculiar kind of air or gas, formerly termed *vital air*, but since named *oxygen*, from its being found to enter into the composition of all acids then known. The remaining seventy-nine parts consist of another peculiar gas, called *azote*, or *nitrogen* gas. Now if a half-extinguished taper is introduced into pure oxygen gas, it blazes up at once; a red-hot wire will burn in it with brilliant scintillations, and burning phosphorus immersed in it throws out a light as dazzling as the sun itself. 2. *Azote*, or *nitrogen gas* has no properties by means of which its action can be subjected to actual inspection; but it is nevertheless important, from the combinations which it forms. Some of these are aqua-fortis, nitrous acid, and the still more remarkable nitrous acid gas. This peculiarly exhilarating substance is one of the compounds of azote with oxygen, and is one of the most singular substances in nature. 3. *Hydrogen gas* is inflammable, of an offensive odour, and is a constituent part of water. When pure, it is fifteen times lighter than atmospheric air, and is therefore used for filling balloons. It retains its gaseous form when combined with carbon, sulphur, and phosphorus. 4. When carbon is burnt in oxygen gas, the gas does not appear to diminish in quantity, but it presents a set of entirely new properties, and is found to be changed into *carbonic acid gas*. It is so much heavier than common air, that it can be kept in an open jar, and poured from one vessel to another. From this property, it also sinks always to the lowest place to which it has access, and is thus found at the bottom of caves, drains, wells, &c., so often proving fatal to life. It is absorbed in large quantities by water, to which it communicates a grateful pungency; in which form it constitutes the mineral or soda water of the shops. Thus, by a singular coincidence, does the same gas afford a fatal poison, and a luxurious refreshment. 5. *Chlorine*, a disinfecting and bleaching gas, is procured by the decomposition of muriatic acid, or of salts which contain it, and is highly valuable from its contributions to the health, convenience, and luxury of man.—Having thus briefly described the leading properties and effects of different gases, we will here add a few observations on the solidification of carbonic acid gas, by means of an apparatus

THE GAS EVOLVED IN STAGNANT WATERS IS CARBURETTED HYDROGEN, AND ABOUNDS IN DECOMPOSED VEGETABLE SUBSTANCES.

consisting of a retort and a receiver, constructed by M. Thilorier, of Paris, and lately elucidated by Mr. Faraday, in a lecture before the Royal Institution. It is known, that by subjecting gases to great pressure, their elasticity is so far counteracted, that they become liquid, ethereal, and volatile. The common process is to expose them to the pressure of their own atmospheres. For instance, carbonate of soda and sulphuric acid, mixed together in a perfectly close vessel, generate carbonic acid gas, which soon fills the vessel; and more and more, until by the reaction of the force to escape upon its own particles, by condensation, the gas becomes liquid. M. Thilorier's apparatus is constructed upon this principle, with materials sufficiently strong to resist the pressure of more than ninety atmospheres. Many successful processes have been made to liquefy carbonic acid gas, and in several of them a white powder had been observed; which, however, was allowed to pass away almost unheeded, until Thilorier contrived to collect the snow-like substance, which he tested, and pronounced to be *solid* carbonic acid. The *liquid* carbonic acid is highly volatile, and therefore, by the rapid expansion and evaporation consequent upon its issue from the receiver, is capable of producing an intense degree of cold,—even 189° below the freezing point of water. This frozen substance, cold as it is, may be held in the hand with impunity, or retained in glass in the open air for a considerable time; because it immediately becomes surrounded with its own vapour, and is not in contact with the substance upon which it apparently rests. In order, then, to use it as a cooling agent, two bodies, of widely different temperatures, are to be brought into contact by a third, which must be a good conductor of heat; and for this purpose ether is employed, because it will bear the contact, and still retain its liquid state. Now, although this is not so cold as solid carbonic acid, yet if one's finger were placed into carbonic acid thus dissolved, the effect would be the same as if it were plunged in melted metal. We see, among the scientific notices in the Literary Gazette and Athenæum, that Mr. Addams has exhibited to the British Association two instruments (extensive and ingenious improvements upon Thilorier's apparatus), for the purpose of liquefying and solidifying carbonic acid gas. One consists of brass, and the other of iron, with the power of resisting a pressure on their inward surface of 300 atmospheres, or two tons to the square inch. He also asserted his belief that it may be profitably employed as an agent of motion—a substitute for steam—not directly, as has already been tried by Mr. Brunel, but indirectly, and as a means to circulate and reciprocate other fluids.

GAS-LIGHT, light produced by the combustion of carburetted hydrogen gas, and applied to the illumination of buildings and streets. It appears that Dr. Clayton, about the year 1735, first gave this a trial, with the view of artificial illumination; though its application to economical purposes was unaccountably neglected for about sixty years. At length, Mr. W. Murdoch, in the employment of Messrs. Watt and Boulton, of the Soho Foundry, instituted a series of judicious experiments on the extrication of gas from the ignited coal; and, in 1798, he erected a gas apparatus on a large scale, at the foundry; thus succeeding in establishing one of the most capital improvements which the arts of life have ever derived from philosophical research and sagacity. In 1803 Mr. Winsor exhibited gas illuminations in the Lyceum, London; and, after presenting to the public a very flattering scheme for instituting a "*national* light and heat company," the sum of 50,000*l.* was raised from a number of subscribers, and the practicability of lighting the streets of cities was proved by his lighting Pall-Mall. Since that time gas has been more extensively employed every succeeding year, till at length almost all factories, and even the smaller towns, are lighted by it. So great, indeed, were the advantages which the public derived from this brilliant light, that in less than twenty years from Mr. Winsor's experiments in Pall-Mall, there were four great gas companies established in the metropolis, having in all 47 gasometers at work, capable of containing 917,940 cubic feet of gas, supplied by 1315 retorts, which generated per annum upwards of 397,000,000 cubic feet of gas, by which 61,203 private lamps, and 7268 public or street lamps were lighted; for which purpose 50,000 tons of coal were annually consumed! Since that period a prodigious increase has taken place. In the first five years, viz. from 1822 to 1827, the abovementioned quantity was nearly doubled; and in the succeeding ten years, it again doubled itself. According to the "general summary" which Dr. Ure has given us, there are, for lighting London and its suburbs with gas—18 public gas works; 12 public gas companies; 2,800,000*l.* capital employed in works, pipes, tanks, gas-holders, and apparatus; 450,000*l.* yearly revenue derived; 180,000 tons of coals used in the year for making gas; 1,460,000,000 cubic feet of gas made in the year; 134,300 private burners supplied to about 40,000 consumers; 30,400 public or street ditto; 380 lamp-lighters employed; 176 gas-holders, several of them double ones, capable of storing 5,500,000 cubic feet; 890 tons of coals used in the retorts on the shortest day in 24 hours; 7,120,000 cubic feet of gas used in the longest night; and about 2500 persons employed in the metropolis alone, in this branch of manufacture.——The following is a slight account of the process by which this beautiful light is generated. The best substances for furnishing a gas rich in luminiferous materials are pitcoal, especially the cannel coal, resin, oil, fats of all kinds, tar, &c. The first operation is the decomposition of the coal by heat, which is effected by subjecting the coal,

THE SULPHURETTED HYDROGEN CONTAINED IN COAL GAS RENDERS IT VERY INJURIOUS TO SILVER AND PLATED GOODS.

enclosed in a cast-iron vessel called a retort, to the action of a furnace. Before the retort becomes red-hot, steam issues along with the atmospheric air. When the retort begins to redden, tar distils in considerable quantity, with some combustible gas, of which hydrogen mixed with ammoniacal gas forms a part. When the retort has come to a bright cherry-red heat, the disengagement of gas is most active. By degrees the gaseous production diminishes, and eventually ceases entirely, although the heat be increased. In the retort a quantity of carbonized coal or coke remains, while tar is found at the bottom of the receiver, covered with the ammoniacal liquor, and combined with carbonic and sulphurous acids, and sulphuretted hydrogen. In order to obtain a good light gas from coals, the distillation should commence with a retort previously heated to a cherry-red, which heat should be steadily continued during the whole operation, from five to eight hours; but the operation should be stopped some time before gas ceases to come over, lest gases with feeble illuminating power should impoverish the contents of the gasometer. Coal gas, as it issues from the retort, cannot be directly employed for illumination, in consequence of its containing vapours of tar and coal oil, sulphuretted hydrogen, carbonic oxyde, &c. It is therefore received in a gasometer, that it may experience uniform pressure, and be discharged uniformly into the pipes of distribution, in order to ensure a steady discharge of gas, and uniform intensity of light in the burners. The apparatus for *purifying* the gas is constructed on the most scientific principles, and consists principally of various pipes, coolers containing water, and sieves of wire-cloth, on which layers of dry pulverised quicklime are laid, and through which the gas passes. This purifying process is instituted with a view of separating carbonic acid and sulphuretted hydrogen from the gas, the presence of either of which is highly detrimental to its illuminating power.——*Oil gas* contains no mixture of sulphuretted hydrogen, and requires no other purification than passing through a refrigerator; and as less of it is required for any given quantity of light, the atmosphere of a room is less heated and contaminated by its combustion. It is, however, considerably more expensive than the gas from coal; although the first outlay of capital for a manufactory upon a large scale is less, on account of the smaller size of the necessary pipes and apparatus. The commonest whale oil, or even pilchard-dregs, quite unfit for burning in the usual way, afford abundance of excellent gas. A gallon of whale oil affords about 90 cubical feet of gas, of an average specific gravity of 0.900; and an argand burner, equal to seven candles, consumes a cubical foot and a half per hour. But it is unnecessary to enter into the process of its manufacture; for although its illuminating power is to that of coal gas as 16 to 10, and its formation more simple than that of coal, yet it is much more expensive, and has a far greater tendency to explode when ignited in combination with common air—both of which are serious objections to its use. It was, however, made by the Portable Gas Company, because they were enabled to compress the gaseous matter obtained from oil to about 1-30th of its volume; hence its portability.——*Rosin gas* has also its advantages, which Mr. Brande thus describes:—"The sources of supply are as inexhaustible, and more generally distributed, than those of the coal; and the forests of America, France, Spain, and Italy, yield the turpentine in quantities only limited by the demand. Many large towns in this country, in America, France, Holland, and the Netherlands, have already adopted the use of this gas. The elegance and simplicity of the manufacture, and the comparatively small capital required for the erection of the works, will also give it the preference in the creation of new establishments." For the origin of this improvement we are indebted to Mr. J. F. Daniell, the distinguished meteorologist: his mode of treating the rosin is, to dissolve by gentle heat about 8 lbs. in a gallon of the essential oil, which is plentifully formed during the composition of oil for making gas, or of rosin itself. This solution was allowed to trickle into the heated retort half filled with coke: thus, from 1000 to 1200 cubic feet of gas are obtained from 1 cwt. of rosin, and rather more than the original quantity of volatile oil is condensed, which is again employed for the solution.—With regard to the comparative expense of different modes of illumination, it appears that—one pound of tallow will last 40 hours in six mould candles burned in succession, and costs 8*d.*; a gallon of oil, capable of affording the light of fifteen candles, for 40 hours, costs 5*s.*, or half the price of mould candles; the cost of wax is about 3½ times that of tallow; and coal gas, as sold at 9*s.* per 1000 cubic feet, will be one-sixth the price of mould candles—500 cubic inches of coal gas giving a light equal to the above candle for an hour.

GASOM'ETER, a hollow cylindrical vessel, usually made of cast metal plates, open at one end, and placed upon its open end in a cistern of water rather larger in dimensions than itself. It serves not merely as a magazine for receiving the gas when it is purified, and keeping it in store for use, but also for communicating to the gas in the act of burning such an uniform pressure as may secure a steady unflickering flame. Its size should be proportional to the quantity of gas to be consumed in a certain time; and it should be strengthened interiorly with cross iron rods.——Before the gas is consumed, it is frequently passed through an instrument called a *meter*, in order to ascertain the number of cubic feet which are used in a given time, or in a particular place. The instrument consists of a sort of evolving drum, index-plates, &c., and is filled with water up to a certain height through an orifice in the side of the

vessel, in which a plug is fitted. The gas enters by a pipe, causing the drum to revolve from right to left, while it again escapes from an orifice on the other side into the pipes to be consumed. By means of a train of wheel-work fixed upon the axis of the drum, an index is turned, which points out on the index-plate how many cubic feet have passed through the meter.

GASOM'ETRY, the science, art, or practice of measuring gases. It teaches also the nature and properties of these elastic fluids.

GAS-BURN'ERS, either simple beaks perforated with a small round hole, or a circle with a series of holes to form an argand flame; or two holes drilled obliquely, to make the flame cross, like a swallow's tail; or with a slit constituting a sheet of flame, like most of the street lamps. The burners are mounted with a stop-cock for regulating the quantity of gas. When several jets issue from the same burner, the light is improved by making all the flames unite into one. Speaking of gas-burners, Mr. Accum observes, "An argand burner, which measures in the upper rim half an inch in diameter between the holes from which the gas issues, when furnished with five apertures 1-25th part of an inch in diameter, consumes two cubic feet of gas in an hour, when the gas flame is 1¼ inch high. The illuminating power of this burner is equal to three tallow candles, eight to the pound. An argand burner three-fourths of an inch in diameter, as above, and perforated with holes 1-30th of an inch in diameter (probably fifteen in number) consumes three cubic feet of gas in an hour, when the flame is 2¼ inches high; giving the light of four candles, eight to the pound. And an argand burner seven-eighths of an inch diameter, as above, perforated with eighteen holes, 1-32nd of an inch diameter, consumes, when the flame is three inches high, four cubic feet of gas per hour, producing the light of six tallow candles, eight to the pound. The height of the glass chimney should never be less than five inches.

GAS'IFY, to convert into gas or an æriform fluid by combination with caloric.

GAS'TRIC JUICE, in the animal economy, a thin pellucid liquor, separated by the capillary exhaling arteries of the stomach. It is the principal agent in digestion: for it acts with a chemical energy in dissolving food, which is not merely reduced to very minute parts, but its taste and smell are quite changed, and it acquires new and very different properties. It is a powerful antiseptic, and even restores flesh already putrefied.

GASTRON'OMY, the science (as it is somewhat facetiously termed) of eating and drinking. Loudly as some declaim against the epicurism of modern gourmands, our gastronomic feats may almost be regarded as specimens of abstinence when compared with the gross and luxurious feeding indulged in by the ancient Romans.

GASTROCELE, in surgery, a rupture of the stomach.

GASTROMANCY, a kind of divination among the ancients by means of words which seemed to be uttered by the belly.

GASTROR'APHY, in surgery, the operation of sewing up wounds of the abdomen.

GASTROT'OMY, in surgery, the operation of cutting into or opening the abdomen.

GA'UGING-ROD, an instrument to be used in measuring the contents of casks or vessels.

GAUZE, a very thin, slight, transparent kind of stuff, woven sometimes of silk, and sometimes only of thread; and frequently with flowers of silver or gold on a silk ground.

GAV'ELET, in law, an ancient and special *cessavit* used in Kent, where the custom of gavel-kind continues; by which the tenant, if he withdraws his rent and services due to the lord, forfeits his lands and tenements.

GAV'EL-KIND, a tenure or custom belonging to lands in Kent, whereby the lands of the father were divided equally at his death among his sons; and the land of a brother, dying without issue, descended equally to his brothers. The principal properties of gavel-kind are, that the tenant is of age to alienate his estate at fifteen years; that the estate does not escheat in case of an attainder and execution for felony, the maxim being—

"The father to the bough,
The son to the plough."

The wife also shall be endowed of a moiety of the gavel-kind lands, of which her husband died possessed, during her widowhood; and a husband may be tenant by courtesy of half his wife's lands, without having any issue by her; but if he marries again, not having issue, he forfeits his tenancy. This species of tenure prevailed in England before the Norman conquest, in many parts of the kingdom, if not throughout the whole realm; but particularly in Kent, where it still exists, in consequence, as is affirmed, of the Kentish men having submitted upon the express condition of retaining their peculiar privileges.

GAV'OT, a kind of dance, the air of which has two brisk and lively strains in common time, each of which is played twice over.

GAZEL'LE, or GAZ'EL, an animal of Africa and India, of the *antelope* genus, partaking of the nature of the goat and the deer. Like the goat, it has hollow permanent horns, and it feeds on shrubs; but in size and delicacy, and in the nature and colour of its hair, it resembles the roe-buck. It has cylindrical horns, most frequently annulated on the base, and bunches of hair on its fore legs; but the beauty and brilliancy of its eye is its most remarkable feature.

GAZET'TE, a kind of official newspaper, containing an account of transactions and events of public or private concern, which are deemed sufficiently important for insertion therein. *Gazetta* is said to have been the name of a Venetian coin, in value be-

THE ATMOSPHERE, EVEN IN THE DRIEST WEATHER.

FROM THE CONNEXION OF THE ORGANS OF DIGESTION WITH THE OTHER PARTS OF THE BODY, GASTRIC DISORDERS ARE OFTEN COMBINED WITH OTHERS.

DIAMONDS, SAPPHIRES, EMERALDS, RUBIES, TOPAZES, HYACINTHS, AND CHRYSOBERYLS, ARE RECKONED THE MOST VALUABLE GEMS.

tween a farthing and a halfpenny in England, which was the price of the first newspaper, and hence the name. The first gazette in England was published at Oxford in 1665. On the removal of the court to London, the title was changed to the *London Gazette*. It is now the official newspaper, and is published on Tuesdays and Fridays.

GAZETTEER', a topographical work, alphabetically arranged, containing a brief description of empires, kingdoms, cities, towns, and rivers. It may either include the whole world, or be limited to a particular country. The first work of this kind, with which we are acquainted, is that of Stephen of Byzantium, who lived in the beginning of the sixth century.

GAZO'NS, in fortification, pieces of fresh earth, covered with grass, and cut in form of a wedge, to line the outsides of works made of earth, as ramparts, parapets, &c.

GEH'LENITE, a recently discovered mineral, by some supposed to be a variety of idocrase.

GEL'ATIN, or GEL'ATINE, a concrete animal substance, or jelly, obtained by boiling with water the soft and solid parts; as the muscles, cartilages, bones, tendons, &c. Of this substance, glue and isinglass are examples. Alcohol and tannin precipitate gelatine from its solution; the former by abstracting the water, the latter by combining with the substance itself into an insoluble compound. Gelatine is capable of assuming an elastic or tremulous consistence when cooled, and liquifying again by the application of heat.

GELATINA'TION, the act or process of converting or being turned into gelatine, or a substance resembling jelly.——The verbs *gelatinate* and *gelatinize*, and the adjective *gelatinous*, are of frequent occurrence in chemical and medical writings.

GELDER-ROSE, in botany, a species of *Viburnum*; also a species of *Spiræa*.

GEM, or GEM'MA, in botany, the bud or compendium of a plant, covered with scales to protect the rudiments from the cold of winter or other injuries. It is also called the hybernacle or winter quarters of a plant.

GELOS'COPY, a kind of divination drawn from laughter; or a method of knowing the qualities and character of a person, acquired from the consideration of his laughter.

GEMS, the name given to *precious stones* in general, but more especially to such as by their colour, brilliancy, polish, purity, and rarity, are sought after as objects of decoration. Gems of the most valuable kinds form the principal part of the crown jewels of sovereign princes, and are esteemed not merely for their beauty, but as comprising the greatest value in the smallest bulk. Gems are remarkable for their hardness and internal lustre. Under this name are comprehended the diamond, ruby, sapphire, hyacinth, beryl, garnet, emerald, topaz, chrysolite, &c. To these have been added rock crystals, the finer flints of pebbles, the cat's eye, the oculus mundi, the chalcedony, the moon-stones, the onyx, the cornelian, the sardonyx, agate, &c. Of most of these species there are some of an inferior class and beauty: these are commonly called by jewellers *occidental stones*. They are mostly the produce of Europe, and found in mines or stone quarries; and are so named in opposition to those of a higher class, which are always accounted *oriental*, and supposed to be only produced in the East. ——*Gem-engraving*, or *Gem-sculpture*, called also *lithoglyptics*, is the art of representing designs upon precious stones, either in raised work, as *cameos*, or by figures cut below the surface, as *intaglios*. This art is of great antiquity, and was probably practised by the Babylonians. Some think the art originated in India; but wherever it originated, we have ample evidence that among the Greeks and Romans it was in high esteem. The merit of cameos and intaglios depends on their erudition, as it is termed, or the goodness of the workmanship, and the beauty of their polish. The antique Greek gems are the most highly prized; and, next to them, the Roman ones of the times of the higher empire.——*Artificial Gems*. In order to approximate as near as possible to the brilliancy and refractive power of native gems, a basis, called a *paste*, is made from the finest flint glass, composed of selected materials, combined in different proportions, according to the preference of the manufacturer. This is mixed with metallic oxydes capable of producing the desired colour.——The *imitation of antique gems* consists in a method of taking the impressions and figures of antique gems, with their engravings, in glass, of the colour of the original gems. Great care is necessary in the operation, to take the impression of the gem in a very fine earth, and to press down upon this a piece of proper glass, softened or half-melted at the fire, so that the figures of the impression made in the earth may be nicely and perfectly expressed upon the glass.

GEMAR'A, the second part of the Talmud or commentary on the Jewish laws.

GEM'INI, in astronomy, the TWINS, a constellation or sign of the zodiac, representing Castor and Pollux. In the Britannic catalogue it contains 85 stars.

GEMMA'TION, in botany, the state, form, or construction of the bud of plants, of the leaves, stipules, and petioles.

GEMO'NIÆ SCA'LÆ, in Roman antiquity, a place for executing criminals, situated on the Aventine mount, or tenth region of the city.

GENDAR'MES, or GENS D'ARMES, in the history of France, an appellation given to a select body of troops, who were destined to watch over the interior public safety, and consequently much employed by the police. They were so called on account of their succeeding the ancient gendarmes, who were completely clothed in armour, and commanded by captain-lieutenants, the king and the princes of the

FINE CRYSTALS OF QUARTZ ARE USED FOR GLASS IN SPECTACLES, ON ACCOUNT OF THEIR HARDNESS, AND ARE THEN CALLED "PEBBLES."

blood being their captains. At the revolution this body was broken up, and the name was given to a corps which was employed in the protection of the streets. August 16th, 1830, a royal ordinance abolished the *gens d'armes*, and established a new body called the *municipal guard* of Paris, to consist of 1443 men, under the direction of the prefect of police.

GEN'DER, in grammar, a distinction in nouns to mark the sexes; genders are either masculine, for the male sex; feminine, for the female sex; or neuter, for those which are of neither sex. The English language has very few terminations by which the genders are distinguished, such as *count* and *countess*, but generally supplies distinct words; as *boy, girl*; whereas, in the Latin and French, the terminations always mark the distinction, as *bonus equus*, a good horse; *bona equa*, a good mare; *un bon citoyen*, a good citizen; *une bonne citoyenne*, a good female citizen.

GENEAL'OGY, a history of the descent of a person or family from a series of ancestors. In various chapters and military orders, it is required that the candidates produce their genealogy, to show that they are noble by so many descents.——The Jews were anxious to preserve their genealogies entire and uninterrupted; and this care on their part affords an argument of considerable importance with respect to the accomplishment of those prophecies that pertain to the Messiah: accordingly, in their sacred writings, we find genealogies carried on for above 3500 years.

GEN'ERAL, the highest rank in the British army, in which they are successively Major-generals, Lieutenant-generals, and Generals, according to seniority, when promotions are made. The chief commander of an army is often called, by way of distinction, the *general-in-chief*.——A particular beat of drum which in the morning gives notice to the infantry to be in readiness to march, is also called the *general*.

GENERALIS'SIMO, the supreme general or commander in chief of an army.

GEN'ERAL ISSUE, in law, that plea which denies at once the whole declaration or indictment, without offering any special matter by which to evade it. This is the ordinary plea upon which most causes are tried, and is now almost invariably used in all criminal cases. It puts everything in issue, that is, denies everything, and requires the party to prove all that he has stated. In many cases, for the protection of justices, constables, excise officers, &c., they are, by act of parliament, enabled to plead the general issue, and give the special matter for their justification, under the act, in evidence.

GEN'ERALIZE, to extend from particulars or species to genera, or to whole kinds or classes. Ex: Copernicus *generalized* the celestial motions, by merely referring them to the moon's motion. Newton generalized them still more, by referring this last to the motion of a stone through the air.

GEN'ERATING LINE (or FIGURE), in geometry, is that by which its motion produces any other plane or solid figure. Thus, a right line moved any way parallel to itself, generates a parallelogram; round a point in the same plane, with one end fastened in that point, it generates a circle. One entire revolution of a circle, in the same plane, generates the cycloid; and the revolution of a semi-circle round its diameter, generates a sphere, &c.

GENERA'TION, in physiology, the act of procreating and producing a thing which before was not; or, according to the schoolmen, it is the total change or conversion of one body into a new one, which retains no marks of its former state. Thus, we say, fire is generated, when we perceive it to be where before there was only wood, or other fuel: and a chick is said to be generated, when we perceive it where before there was only an egg.

GEN'ERATOR, in music, the principal sound or sounds by which others are produced. Thus the lowest C for the treble of the pianoforte, besides its octave, will strike an attentive ear with its twelfth above, or G in alt., and with its seventeenth above, or E in alt. Hence C is called their *generator*, the G and E its products or harmonics.

GENER'IC, or GENER'ICAL, an epithet pertaining to a genus or kind. It is a word used to signify all species of natural bodies, which agree in certain essential and peculiar characters, and therefore all of the same family or kind; so that the word used as the *generic* name, equally expresses every one of them, and some other words expressive of the peculiar qualities of figures of each are added, in order to denote them singly, and make up what is called the *specific* name. Thus the word *rosa*, or rose, is the generic name of the whole series of flowers of that kind, which are distinguished by the specific names of the red rose, the white rose, the moss rose, &c. Thus also we see, *Canis* is the *generic* name of animals of the dog kind; *Felis*, of the cat kind; *Cervus*, of the deer kind, &c.

GEN'ESIS, a canonical book of the Old Testament, and the first of the Pentateuch, or five books of Moses. The Greeks gave it the name of Genesis, from its beginning with the history of the creation of the world. It includes the history of 2369 years, and besides the history of the creation, contains an account of the original innocence and fall of man; the propagation of mankind; the general defection and corruption of the world; the deluge; the restoration and re-peopling of the earth; and the history of the first patriarchs down to the death of Joseph.

GEN'ET, an animal of the weasel kind, resembling the civet-cat in its musk smell. Also, a small sized, well-proportioned Spanish horse.

GENETH'LIACS, the pretended science of calculating nativities; an astrological mystery.

GENIC'ULATED, in botany, knee-joint-

PERICLES, THE FOUNDER OF GREEK EMINENCE, PATRONISED GENIUS, AND SPENT ON THE ARTS WHAT IS USUALLY WASTED ON LUXURY.

ed; an epithet applied to a stem, peduncle, or awn, forming a very obtuse angle at the joints.

GENIOGLOS'SI, in anatomy, a pair of muscles with which the tongue is thrown out.

GENIS'TA, in botany, a genus of plants in the Linnæan system, class 17 *Diadelphia*, order 4 *Decandria*. The species are shrubs.

GEN'ITIVE CASE, the second case in Latin and Greek nouns, which denote possession: it is marked in English by s with an apostrophe, thus ('s).

GE'NIUS, an aptitude for a particular pursuit, founded on some stimulus in youth, by which the mind and faculties are directed to excellence. It combines opposite intellectual qualities; the deepest penetration with the liveliest fancy; the greatest quickness with the most indefatigable diligence. To what is old it gives a new form; or it invents new; and its own productions are altogether original. We estimate it higher than *talent*, in the common acceptation of that term, which in the capacity for originating in extent and energy is inferior to *genius*. Where ordinary powers advance by slow degrees, genius soars on rapid wings. But genius does not assume its distinctive character in every exercise of its powers. A gifted poet, for instance, is not necessarily an ingenious philosopher, nor does the statesman's genius include that of the soldier. We distinguish this genius, therefore, into various kinds, as poetical, musical, mathematical, military, &c.; thus, for example, Milton possessed a genius for poetry, Mozart for music, Newton for mathematics, &c. Yet, although the union of great excellence in different walks of art and science is but rarely found in one man, some, like Michael Angelo, who was equally celebrated as a statuary, architect, and painter, are found possessing genius of a most comprehensive character.——By the ancients the word *genius* was used in an absurd or figurative sense, to express a supposed invisible spirit which directs a course of events. There were both good and bad *genii*. According to the belief of the Romans, every person had his own genius, that is, a spiritual being, which introduced him into life, accompanied him during the course of it, and again conducted him out of it at the close of his career. This belief was no doubt a consequence of their idea of a divine spirit pervading the whole physical world; and was probably a personification of the particular structure or bent of mind which a man receives from nature.

GEN'TILES, a name given by the Jews to all who were not of the twelve tribes of Israel. Among Christians, it is the name of all heathens who did not embrace the Christian faith.

GEN'TLEMAN, in law, any man above the rank of a yeoman. In common speech, every well-bred man: in short, the term is with great propriety applied to men of education, probity, and good breeding, whatever may be their rank or occupation.

GE'NUS, in natural history, a subdivision of any class or order of things, whether of the animal, vegetable, or mineral kingdoms. All the species of a genus agree in certain characteristics.——In botany, a *genus* is a subdivision containing plants of the same class and order, which agree in their parts of fructification.——In medicine, a division of any order of diseases which contains the species.——In music, a distribution of the *tetrachord*, or the four principal sounds, according to their quality.

GEOCEN'TRIC, in astronomy, an epithet designating the place in which a planet appears to us from the earth, supposing the eye to be fixed there, or it is a point in the ecliptic to which a planet seen from the earth is referred.

GENTIA'NA, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*, of many species. The common gentian is a native of the mountainous parts of Germany. The root, the only part used, has a yellowish brown colour and a very bitter taste, and is used as an ingredient in stomachic bitters.

GENTOO', a native of India, who follows the religion of the bramins. [See HINDOO.]

GE'ODE, in mineralogy, a roundish lump of agate or other mineral, or a mere incrustation. Its interior is sometimes empty, and the sides of its cavity are lined with crystals; sometimes it contains a solid movable nucleus; and sometimes it is filled with an earthy matter.——*Geodiferous*, producing geodes.

GE'ODESY, that part of geometry which respects the doctrine of measuring surfaces, and finding the contents of all plain figures.——Hence *geodet'ic* and *geodet'ical*, applied to whatever pertains to the art of measuring surfaces.

GE'OGNOSY. This word is nearly synonymous with geology; and is used to denote a knowledge of that part of natural history which treats of the substances composing the crust or covering of the globe.

GEOG'RAPHY, the description of the surface of the earth, its natural divisions, and local characteristics. The fundamental principles of geography are the spherical figure of the earth, its rotation on its axis, its revolution round the sun, and the position of the axis or line round which it revolves, with regard to the celestial luminary; whence it follows that astronomy is the key of all geographical knowledge. In general terms, the earth is termed a perfect sphere, in which case, the diameter from north to south would be precisely equal to the diameter from east to west; but it having been found that the latter exceeds the former by thirty-six miles, the shape of the earth is more truly denominated an oblate spheroid: by which is to be understood a globe, the upper and lower parts of which are flattened. [See EARTH.] *General* geography comprehends the knowledge of the earth in general, and the affections common to the whole globe, as its figure, magnitude, motions, circles, winds, tides, meteors, divi-

THE RULER OF A FREE COUNTRY MAY ENHANCE ITS PROSPERITY MORE BY REWARDING GENIUS, THAN BY MAINTAINING ARMIES.

sions into land and water, &c. *Particular* geography has respect to particular countries, showing their boundaries, figure, climate, seasons, inhabitants, arts, customs, language, history, &c. When it respects regions, districts, or parts of countries, it is called *chorography*; and when particular cities, towns, or villages, &c., it is called *topography*. *Ancient* geography treats of the countries and places existing among the ancients; *modern* geography describes the various countries that now exist, and of which we are able to glean information from travellers; *sacred* geography treats of places mentioned in the Bible. There are also two other aspects under which geography may be considered, viz. physical and political geography. *Physical* geography comprises geology, hydrography, meteorology, and a description of the animal, vegetable, and mineral kingdoms. In *political* geography, the earth is considered as the abode of rational beings, according to their diffusion over the globe, and their social relations as they are divided into larger or smaller societies. It does not, however, include that information which is properly and exclusively termed statistical. For, while statistics represents the individual state, as a whole connected in itself, with a perpetual regard to public law, politics, and policy, geography treats exclusively of the local relations of a country.—As a science the ancients knew little indeed of geography; yet we find that they did not overlook or neglect it. It was a constant custom among the Romans, after they had conquered and subdued any province, to have a map of it carried in triumph, and exposed to the view of the spectators. Historians inform us, that the Roman senate, about a hundred years before Christ, sent geographers into various parts to make an accurate survey and mensuration of the globe, but we now know that they scarcely saw the twentieth part of it. Before them, Necho, king of Egypt, ordered the Phœnicians to make a survey of the whole coast of Africa, which they accomplished in three years. Darius procured the Ethiopic sea, and the mouth of the Indus, to be surveyed; and Pliny relates, that Alexander, in his expedition into Asia, took two geographers to measure and describe the roads; and that from their itineraries, the writers of the following ages gleaned the chief of their information. The honour of reducing geography to a system was, however, reserved for Ptolemy, who, by adding mathematical advantages to the historical method in which it had been treated of before, described the world in a much more intelligible manner; delineating it under more certain rules, and fixing the bounds of places from longitude and latitude. As a work of science, therefore, his system deservedly held the first rank among the ancients; and but little was added to what he achieved until the time of Copernicus, A.D. 1520. From that period to the present, the science of geography has been steadily advancing; continual accessions to it having been made—by new discoveries, by accurate accounts of travels by land and water, by systematic topographies and more precise measurements of countries—in short, by that spirit of investigation which has been awakened, and by the increased industry and intelligence of every succeeding age.

GEOL'OGY, the science which describes the structure of the earth, and investigates the successive changes which have taken place in the organic and inorganic kingdoms of nature. In order to give as clear an idea of this science as our circumscribed limits will permit, it will in the first place be necessary to notice the principal modern theories upon which a knowledge of geology may be said to be founded.——According to the sacred theory of Burnet, the whole materials of which the earth is composed were united together in one fluid chaotic mass. When these elements began to separate, the heavier particles formed a nucleus, and the water and the air occupied places according to their specific gravity. The air, however, was not, as we now see it, a transparent, attenuated medium, but it was loaded with exhalations and impurities, which it gradually let fall upon the surface of the water, and then floated upon the whole in cloudless serenity. The deposited matter, constituting a rich crust, sent forth its vegetable productions, and soon became clothed with uninterrupted verdure; everything was smooth, soft, and regular, and there was, he says, an universal spring, for the plane of the ecliptic was coincident with that of the equator. In process of time, however, the green and even surface, just described, began to suffer from the continuous action of the sun's rays, which formed cracks and fissures, that ultimately extended to the abyss of waters beneath, and these being sent forth by elastic vapours expanded by heat, soon inundated the superficies; an universal deluge ensued; and in the violent shocks and concussions that attended it, rocks and mountains, and all the inequalites of the present surface, had their origin; then the waters gradually subsided into the residuary cavities, forming the ocean; and partly were absorbed into the crevices of the disjointed strata and nucleus; vegetation began to re-appear, and the once uninterrupted and uniform surface was now broken up into islands and continents, mountains and valleys.—We may here remark, that the labours of modern geologists have exploded this fanciful theory, which, though supported with much erudition and plausibility, is now treated merely as an elaborate fiction.——In an essay towards a natural history of the earth, by Woodward, it is supposed that a new crust was deposited on the earth from the waters of the deluge, and that the materials of which it is composed are arranged according to their specific gravity; the heaviest and hardest bodies forming the nucleus, and being covered by those of a finer and lighter quality.——Buffon's theory was far

more extravagant: he imagined that the planets in general were struck off from the sun by a comet; and that, being composed of fluid matter, they assumed a spherical form, and, by the operation of centrifugal and centripetal forces, were retained in their orbits. As the earth cooled, the surrounding vapours were condensed on its surface, and other matters finding their way into fissures and cavities, formed veins and masses of metallic and earthy minerals. But by the motion of the earth, by the action of the sun, winds, and tides, new changes were produced. The waters were greatly elevated about the equator, and brought with them solid fragments from the polar regions; the surface of the globe now exhibited a broken and irregular aspect; here land arose, there hollows and cavities were formed. Buffon, in fact, believed the earth to have been liquefied by fire; or, in other words, that it was an extinguished sun or vitrified globe, whose surface had been operated upon by a deluge. He assumed, indeed, that the earth was 75,000 years in cooling to its present temperature, and that in 98,000 years more, productive nature must be finally extinguished.——In Werner's theory, which was highly lauded, and which produced conviction in the minds of many, it is assumed that the materials of which the external crust of the earth is composed were either dissolved or suspended in water; and that the first class of rocks were deposited from a state of chemical solution, and thus exhibit a crystalized appearance. In the next series of rocks a few organized remains are observed, and hence it is concluded that marine animals were created about the time when these rocks, which are called *transition* (or *Silurian) rocks*, were formed. After this period the waters of the earth, holding in suspension particles of matter in a state of minute division, derived from the disintegration of the first series of rocks, began to subside more rapidly, and to deposit that series of strata which are denominated *secondary rocks*, or floetz rocks, because they are deposited in beds in a horizontal position. By the action of the air and the operation of the water, the three classes of rocks being wasted down and broken, produced inequalities on the surface of the earth, and the waters still further subsiding, deposited the different kinds of alluvial matters. In this system a fifth class of rocks, including those substances which are ejected by volcanoes, are called *volcanic rocks*. The formation of *vertical strata* forms a prominent feature in theories of the earth. According to the theory of Werner, as the waters which held in solution or suspension the materials of which the solid parts of the earth are composed subsided, fissures were formed, and the waters holding in solution other earthy and metallic matters, again covered the earth and deposited these matters in the fissures. ——The *Huttonian* theory is founded on the presumption that the surface of the globe is in a state of constant destruction and renovation. By the action of air and water the hardest rocks are subject to decay and decomposition; and the disintegrated materials are conveyed to the ocean, and there accumulating, are formed into horizontal layers. The strata thus deposited are supposed to be consolidated by the heat of central fires; and to the action of the same subterranèous heat, the production of the primitive rocks, which are supposed to have been projected in a state of fusion from the bowels of the earth, is ascribed. To the operation of the same cause, all kinds of basaltic rocks are also supposed to owe their existence; and the materials of metallic veins, and of the vertical strata, have been ejected in a state of fusion from the centre of the earth, and deposited in fissures either previously formed, or which they form for themselves in their progress through the superincumbent strata. In this theory the operation of both fire and water is introduced; the disintegration and decomposition of the solid parts of the globe are produced by water, and, being deposited at the bottom of the ocean, are consolidated and hardened by heat; and a new series of rocks, projected in a state of fusion by the action of the same power, burst through the secondary strata, and elevating it to great heights, constitute a new series of primitive rocks.——Having thus given an outline of the various popular theories which have chiefly engaged the attention of geologists during the last century, we may now remark, that the two prevailing theories of the present time are, 1st, that which attributes all geological phenomena to such effects of existing causes as we now witness; and 2ndly, that which considers them referable to series of catastrophes, or sudden revolutions. The difference in the two theories is in reality not very great; the question being merely one of intensity of power, so that, probably, by uniting the two, we should approximate nearer the truth. The character of geology has, in fact, undergone a total change within the last half century. Geologists now no longer bewilder their imaginations with wild theories of the formation of the globe from chaos, or its passage through a series of hypothetical transformations, but rather aim at a careful and accurate examination of the records of its former state, which they find indelibly impressed on the great features of its actual surface, and to the evidence of former life and habitation, which organized remains, imbedded and preserved in its strata, indisputably afford. That the earth has at different periods been violently convulsed, and that extraordinary changes have in consequence been effected by such convulsions, there is abundant evidence. Without entering into speculations with regard to great and sudden changes which may have taken place anterior to the Mosaic deluge, the traces of that are very conspicuous. So also are the effects of volcanic action, earthquakes, &c., and the changes which they produce on

MARINE SHELLS ARE FOUND IN ELEVATIONS FAR ABOVE THE LEVEL OF THE SEA, AND WHERE THE SEA COULD NOT REACH BY ANY EXISTING CAUSE.

the earth's surface form an important consideration in geology. Although we are entirely ignorant of the means employed by nature in producing volcanic fire, we know that by their violence lava is vomited forth, and that substances which were before buried deep in the bowels of the earth, after having their nature changed or modified, have been raised into mountains. Werner distinguishes two kinds of earthquakes. Some, he says, appear to be connected with a particular volcano, and to have their focus in the same region: these are only felt to the distance of a few leagues around, and their paroxysms are almost always connected with those of the volcano. Others, which appear to have their focus at a much greater depth, and whose effects are much greater, are propagated to immense distances with incredible celerity, and are felt almost at the same time at points thousands of miles distant from each other. It is the agitation of the sea that shows the great extent of the tracts of land which are thus convulsed. In this respect, the earthquake at Lisbon, in 1755, was the most remarkable and most violent that we have on record as ever visiting Europe. In consequence of it, by the concussion on the bottom, or momentary rising or upheaving of the sub-marine land, the sea overflowed the coasts of Sweden, England, and Spain, also the coasts of Antigua, Barbadoes, and Martinique in America. At Carlisle bay, in Barbadoes, the tide, which rises only twenty-eight inches, rose twenty feet, and the water appeared as black as ink, owing probably to bituminous matter thrown up from the bed of the ocean. A wave of the sea, sixty feet high, overflowed a part of the city of Cadiz; and the lakes of Switzerland were observed to be in commotion six hours after the first shock. In the year 1772, during an eruption of one of the loftiest mountains in Java, the ground began to sink, and a great part of the volcano, and part of the neighbouring country, fifteen miles long and six broad, was swallowed up. Numerous examples might also be given, were it necessary, of the upraising of the land by earthquakes, and to vast inundations which with irresistible force have swept over our present continents, elevating mountains, excavating valleys, breaking the continuity of strata, and carrying the broken parts to countries far distant from their original situation. By the upheaving of the incumbent surface, while one part was rising, another part would sink, and form a new bed, into which the waters of the ocean would gradually retire. Hence, many of the strata which bear evident marks of having been deposited at the bottom of the sea, and of course in a horizontal state, are now found in a position highly inclined to the horizon, and even occasionally vertical. "Everything," says Humboldt, "indicates that the physical changes of which tradition has preserved the remembrance, exhibit but a feeble image of those gigantic catastrophes which have given mountains their present form, changed the position of the rocky strata, and buried sea shells on the summit of the higher Alps. It was undoubtedly in those remote times which preceded the existence of the human race, that the raised crust of the globe produced those domes of trappean porphyry, those hills of isolated basalt in vast elevated plains, those solid nuclei covered with the modern lavas of the Peak of Teneriffe, of Etna, and Cotopaxi." We must now proceed to make some general remarks on the component parts of the earth's crust or covering. This consists chiefly of various kinds of rocks and mountain masses, more or less extensive; and of loose stones, gravel, sand, and loam, all of which are produced by the mechanical division of large masses, by their decomposition or disintegration from the action of air, moisture, &c., or from the continued action of streams of water, torrents, &c. Mountains have been found by geologists to consist, at a considerable depth, of strata regularly disposed, which have been classed under the heads of granite, gneiss, mica slate, clay slate, primitive limestone, primitive trap, serpentine porphyry, sienite topaz, quartz rock, primitive flinty slate, and primitive gypsum. These are altogether denominated *primitive rocks*, which have no organic remains, and appear to have been undisturbed. But in the strata above these there are evident signs of violent fractures caused by the action of waters. In this manner valleys have been excavated, and a separation thus occasioned in strata that once evidently formed one continuous range. Such water-worn fragments have, from the cause of their existence, been denominated *diluvium*, to distinguish them from other debris produced by causes still in operation, such as the *alluvium* or the accession to lands by inundations, torrents, and the like, as also the volcanic rocks formed by the eruptions of mountains. Besides the rocky fragments and insulated hills above mentioned, the strata above these primitive rocks contain also *organic remains*. In those immediately above, called transition rocks, fossil remains of corals and shells are found in small quantities, as also in the carboniferous limestone that lies next to these rocks. The coal strata, which follow, abound with vegetable remains of ferns, flags, reeds of unknown species, and large trunks of succulent plants, which are altogether unknown either in description or in nature. Above the coals are beds containing corals and shells, which, like those in the strata below, are characterized by this peculiarity, that in some places they are to be found in families, and that in other places there will be found beds of marine shells in one layer, and those peculiar to fresh water in another layer, resting one over the other in alternate succession. In the highest of the regular strata, called the crag, will be found the shells at present existing in the same coast, and, lastly, over all these strata is a covering of gravel, which is remarkable for containing the remains of numerous quad-

THERE ARE BEDS OF SEA-SHELLS TWO THOUSAND FEET HIGH ON MOUNT ETNA, AND STRATA OF GREY CLAY, FILLED WITH SHELLS, MUCH HIGHER.

rupeds, as the bones, horns, teeth, shells, scales, &c. These animals are for the most part either foreign to the climates where their remains are found, or they are of a larger size than any now known, or they are altogether different from any species of animal hitherto known or mentioned. Thus the races of beings which were last destroyed, lie in the upper strata of the earth, while their predecessors are buried far beneath; but each presents characteristics sufficient to mark and identify them. —Among the most interesting and important of the phenomena connected with the stratification and division of rocks, are the breaks which not unfrequently occur in copper, coal, and other mines, where one rock seems to have slipped by the adjoining one, or to have changed its place, so that the metallic or other vein running through them both, is interrupted, and the continuation of it is thrown higher or lower than the first part. The particular situation of minerals, their course and position, which constitute the basis of all mining operations, are of great importance. The courses or veins of minerals sometimes follow straight lines of direction, and at others are bent a. d curved in various directions. A vein is sometimes compressed or diminishes in thickness; it sometimes stops in the direction of its length; and it is said to be lost, when it splits into several small veins. The vein consists either of one or of several species of minerals; it contains cavities of various form and size, either filled with minerals or having their sides encrusted, or covered by crystals of various kinds, which cavities are called *druses*. Very extensive deposits of minerals, of limited length, are termed *standing beds*, or masses; and mountain masses, intersected by great numbers of small veins and deposits, are called *floors*. Foreign deposits of different kinds occur in mountains, and in rocky districts of all sorts. These all deserve and command the attention of the geologist; but there is nothing of more importance and interest than the presence of petrifactions, and the remains of those races of animals which are now extinct. [See ORGANIC REMAINS.] We will conclude with a parallel betwixt the sciences of geology and astronomy, as drawn by that true philosopher, Sir J. Herschel: "Like astronomy, the progress of geology depends on the continued accumulation of observations carried on for ages. But, unlike astronomy, the observations on which it depends, when the whole extent of the subject to be explored is taken into consideration, can hardly yet be said to be more than commenced. Yet, to make up for this, there is one important difference, that, while in the latter science it is impossible to recal the past or anticipate the future, and observation is in consequence limited to a single fact in a single moment, in the former the records of the past are always present; they may be examined and re-examined as often as we please, and require nothing but diligence and judgment to put us in possession of their whole contents."

GEOLOGICAL MAPS AND MODELS. In order to assist the geological student in his inquiries, as well as to facilitate mining operations, there have of late years been published some very valuable maps, representing the different known strata in Great Britain, North America, and various parts of the continent. And at a late meeting of the British Association it was particularly urged by Dr. Buckland and others, that a series of geological works should be perfected and published by the government, as was done by the United States. It appears also, by a method laid down by Mr. Sopwith, that geological models can easily be made, showing not only the position and thickness of the strata in a vertical section, but the actual surfaces and imbedding of the strata lying in different planes, with every undulation and indentation. One of the uses of these models is to point out the partitions of mining property, and prevent trespass; another is, that it makes those who are interested in it acquainted with every particle of coal under the forest; and a third, that it shows them where and how it ought to be worked, and by that means will enable them to prevent a recurrence of that horrible loss of life and destruction of property, which has so frequently taken place.

GE'OMANCY, a kind of divination by means of figures or lines, formed by little dots or points, either on the earth or on paper, and representing the four elements, the cardinal points, the planetary bodies, &c. This pretended science was flourishing in the days of Chaucer, and was deeply cultivated by Dryden, at the time of his *rifaccimento* of the Knight's Tale. Cattan, who wrote a book on geomancy in the 16th century, absurdly enough observes, that it is "no art of inchaunting, as some may suppose it to be, or of divination, which is made by diabolicke invocation; but it is a part of natural magicke, called of many worthy men the daughter of astrologie, and the abbreviation thereof."

GEOM'ETRY, that branch of mathematics which treats of the magnitudes and properties of dimensions; or in other words, the science of magnitude in general, comprehending the doctrines and relations of whatever is susceptible of augmentation and diminution: as the mensuration of lines, surfaces, solids, velocity, weight, &c. with their various relations. The origin of this science is always attributed to Egypt, where it is said to have been produced by the necessity of ascertaining the boundaries of landed property, which are every year effaced by the inundations of the Nile. The Greeks, who cultivated geometry more than any other people, doubtless learned the rudiments from the Egyptians; for Thales, who travelled into Egypt and acquired a sufficient knowledge of astronomy to calculate, must also have first become acquainted with the principles of geometry to assist him in his astronomical inquiries. From the time of Euclid, who died three hundred years before the Christian era, to that of Purback and Müller, who died in the

PLATO VALUED GEOMETRY SO HIGHLY, THAT HE INSCRIBED OVER THE DOOR OF HIS ACADEMY, "LET NO ONE IGNORANT OF GEOMETRY ENTER HERE."

ABOUT FIFTY YEARS AFTER PLATO, EUCLID COLLECTED THE THEOREMS OF HIS PREDECESSORS, AND ENTITLED THEM THE "ELEMENTS OF GEOMETRY."

fifteenth century, geometry was neglected. Since its revival, it has benefited by the illustrious labours of Neper, Descartes, Newton, and Leibnitz; and it is universally allowed to be of the utmost value as a branch of general knowledge, since it induces precision of thinking, by admitting nothing but evident and indubitable demonstration. The science of geometry is distinguished into the theoretical and the practical. Theoretical or speculative geometry treats of the various properties and relations in magnitudes, &c. Practical geometry comprehends the construction of figures, the drawing of lines in certain positions, as parallel or perpendicular to each other, &c. Speculative geometry is again distinguished into elementary geometry, that treats of the properties and proportions of right lines and right-lined figures, as also of the circle and its several parts: and the sublime or transcendental geometry, that treats of the higher order of curves, &c. The elementary principles of geometry are explained in definitions and axioms. The following are the most important definitions. A *point* is that which has neither length, breadth, nor thickness. A *line* has length without breadth or thickness. A *superficies*, or *surface*, has length and breadth only, the boundaries of which are lines. A *solid* is a figure which has length, breadth, and thickness. A *curve* continually changes its direction between its extreme points. A *straight* line lies evenly between the parts. *Parallel* lines keep at the same distance from each other when extended indefinitely. A *perpendicular* line is perpendicular to another line. An *angle* is formed by the meeting of two lines in a point; it is a *right angle* when formed by one line falling perpendicularly on another line; an *obtuse angle*, when it is greater than a right angle; and an *acute angle* when it is less. A figure of three sides and angles is called a *triangle*. An *equilateral* triangle is that whose three sides are equal. An *isosceles* triangle is that which has two sides equal. A *scalene* triangle is that whose three sides are all unequal. A figure of four sides and angles is called a *quadrangle*, or *quadrilateral*. A *parallelogram* is a quadrilateral which has both its pairs of opposite sides parallel; and a *rectangle* is a parallelogram, having a right angle. Four-sided figures are moreover distinguished according to their sides and angles, into a *square*, which has all its sides equal and its angles right ones; an *oblong* square, which has its opposite sides equal and its angles right ones; a *rhombus*, having all the sides equal, but the angles not right ones; and a *rhomboid*, having the opposite sides equal and the angles not right ones. When a quadrilateral has none of its sides parallel, it is a *trapezium*, and when only two of its sides parallel, a *trapezoid*. The *diagonal* is the right line which divides a parallelogram into two equal parts. The *base* of a figure is the side on which it is supposed to stand. The *vertex* is the extreme point opposite to the base; the *altitude* is the perpendicular distance from the vertex to the base. A *circle* is a plane figure bounded by a curve line, called the *circumference*, which is every where equidistant from a certain point within, called its *centre*; the *radius* of a circle is a line drawn from the centre to the circumference; the *diameter* of a circle is a line drawn through the centre, and terminating at the circumference on both sides; an *arc* of a circle is any part of the circumference; a *chord* is a right line joining the extremities of an arc; a *segment* of a circle is any part of a circle bounded by an arc and its chord; a *semicircle* is half the circle or a segment cut off by a diameter; a *sector* is any part of a circle which is bounded by an arc, and two radii drawn to its extremities; and a *quadrant*, or quarter of a circle, is a sector having a quarter of the circumference for its arc. The circumference of every circle is supposed to be divided into 360 equal parts, called *degrees*; each degree into 60 *minutes*; and each minute into 60 *seconds*: hence a semicircle contains 180 degrees, and a quadrant 90 degrees. A *pyramid* is a solid figure contained by planes that are constituted betwixt one plane and one point above it in which they meet. A *prism* is a solid figure contained by plane figures of which two that are opposite are equal, similar, and parallel to one another; and the others parallelograms. A *sphere* is a solid figure described by the revolution of a circle. A *cone* is a solid figure described by the revolution of a right-angled triangle about one of the sides containing the right angle. A *cylinder* is a solid figure described by the revolution of a right-angled parallelogram about one of its sides. And a *cube* is a solid figure contained by six equal squares. An *axiom* is a manifest truth not requiring a demonstration: The following are examples of axioms, "Things equal to the same thing are equal to one another:" "The whole is greater than any of its parts, and equal to all its parts." "If equal things be taken from equal things, the remainders will be equal." "Magnitudes which coincide with one another, or which exactly fill the same space, are equal to one another." A *proposition* is something proposed either to be done or to be demonstrated, and is either a problem or a theorem: it is a *problem* when it proposes anything to be done, as to divide a given line into two equal parts, or to raise a perpendicular, &c.; and a *theorem* when it proposes something to be shown, as, that triangles of the same base and altitude are equal to each other, or that all the angles in the same segment of an arc are equal, &c. When something is premised, or demonstrated, in order to render what follows more easy, it is termed a *lemma*. A *corollary* is a consequent truth, gained immediately from some preceding truth or observation. A *scholium* is a remark or observation made upon something going before it.——*Transcendental Geometry*, is the geometry of figures, the relation of whose ordinate and abscissa cannot be expressed algebraically.——*Geometrical Progression* is

when the terms increase or decrease by equal ratios; as 2, 4, 8, 16, 32; or 32, 16, 8, 4, 2.

GEOPON'ICS, the art or science of cultivating the earth.

GE'ORAMA, a hollow sphere, 36 feet in diameter, representing the surface of the earth, its mountains, seas, rivers, &c. with great accuracy. It is a Parisian invention.

GEORGE (St.), a saint or hero whose name is famous throughout all the East, and by which several orders, both military and religious, have been distinguished. St. George is usually represented on horseback, in full armour, with a formidable dragon writhing at his feet. His sanctity is established in the Latin as well as the Greek church; and England and Portugal have chosen him for their patron saint. According to ancient legends, this renowned saint was a prince of Cappadocia; whose greatest achievement was the conquest of an enormous dragon, by which he effected the deliverance of Aja, the daughter of a king. The legend belongs to the age of the crusades. The ancient Christian emperors bore the knight upon their standards. To these sacred banners the crusaders attributed a miraculous power, and were sure of conquest while they floated above their heads. Many, however, deny his very existence; and reduce his effigy to a mere symbol of victory gained by the crusaders over the Mussulman nation.

GEOR'GICS, a poetical composition treating of husbandry, after the manner of Virgil's poems on rural subjects, which are called Georgics.

GEOR'GIUM SI'DUS, or URA'NUS, the name given by Dr. Herschel, in honour of George III., to the planet which he discovered in 1781.

GERA'NIUM, a genus of plants, class 16 *Monadelphia*, order 5 *Decandria*. Of this there are numerous species, which are remarkable for the beauty either of their leaves or their flowers, or both. The seeds of the flower are contained in a husk, which resembles a stork's beak, whence it has acquired the English name of crane's bill.

GER'MAN, a native of Germany. Also, the German language.——*Cousins-german*, the sons or daughters of brothers or sisters; first cousins.

GERMAN'DER, in botany, the name of several plants, as the *rock germander*, of the genus Veronica, and the *common* and *water* germander, of the genus Teucrium.

GER'MEN, in botany, the germ, ovary, or seed bud, which is the lower part or base of the pistil, and in the progress of vegetation becomes the seed-vessel.

GERMINA'TION, in botany, the act of sprouting forth, as applied to the seeds of vegetables; also the time when they vegetate.

GEROCO'MIA, that part of medicine which prescribes a regimen for old age.

GER'RA, in antiquity, a sort of square shield, used first by the Persians, and afterwards by the Greeks.

GER'UND, in grammar, a verbal noun of the neuter gender, partaking of the nature of a participle, declinable only in the singular number, through all the cases except the vocative; as, nom. *amandum*, gen. *amandi*, dat. *amando*, accus. *amandum*, abl. *amando*.

GESNE'RIA, in botany, a genus of plants, class 14 *Didynamia*, order 2 *Angiospermia*. The species are shrubs.

GES'TURE, any action or posture intended to express an idea or passion, or to enforce an argument or opinion: hence propriety of gesture is of the first importance to an orator.

GHOST, the soul or spirit separate from the body. The ancients supposed every man to be possessed of three different ghosts, which, after the dissolution of the human body, were differently disposed of. These they distinguished by the names of *Manes*, *Spiritus*, *Umbra*. The *Manes*, they fancied, went down into the infernal regions; the *Spiritus* ascended to the skies, and the *Umbra* hovered about the tomb, as being unwilling to quit its old connexions. ——*To give up the ghost*, a phrase used in Scripture for—to yield up the breath, or expire.

GHOST, HOLY; the third person in the Holy Trinity; but according to the Socinians, a biblical metaphor, to designate the divine influence. All Christians who subscribe to the doctrine of the Athanasian creed, believe the Holy Ghost to have proceeded from the Father and the Son; yet the Son and Holy Ghost are both eternal, since they are co-eternal with the Father. The Greek church maintains that the Holy Ghost proceeds from the Father only; and this difference is one of the main points of distinction between that church and the Roman Catholic.——A military order in France under the old *regime*, which was abolished by the revolution, but revived by the Bourbons.

GI'ANT'S CAU'SEWAY, a vast assemblage of basaltic crystalized rocks, on the northern coast of Ireland, so extensive and regular as to excite the admiration of every beholder. This magnificent production of nature extends two miles in length along the coast of Antrim, and probably runs under the sea as far as the coast of Scotland, since something of the same kind is met with there, and known by the name of Fingal's Cave. It consists of many hundred thousands of columns of a black kind of rock, hard as marble, of about twenty feet in height, and a pentagonal or five-sided figure. Each column stands by itself, not joining another in any part whatever; and yet so compactly are the whole arranged that scarcely a knife can be introduced between them. What still farther fills the spectator with an amazement that increases by length of examination, is the circumstance that though almost every pillar is pentagonal in its form, and therefore presents an apparently general likeness, no two in twenty thousand have their angles and sides equal among themselves,

or to each other. The columns are not each of one solid stone, in an upright position, but composed of several short lengths, exactly joined, not with flat surfaces, but articulated into each other, as a ball in a socket, one end of the joint having a cavity of three or four inches deep, into which the convex end of the opposite joint is exactly fitted.

GI'ANTS. History, both sacred and profane, makes mention of giants, or people of extraordinary stature. Nations, as well as individuals, in their infancy, love the miraculous; and any event which deviates from the common course of things, immediately becomes a wonder on which poetry eagerly seizes; hence the Cyclops and Læstrygons of the ancients, and the ogres of romance. Instances, however, are by no means wanting of uncommonly large persons, hardly needing the exaggeration of a lively imagination to make them objects of wonder. The giants spoken of in Scripture might be men of extraordinary stature; but not so much above the ordinary measure as they have fancied, who describe them as three or four times larger than men are at present. And when we find the Israelites describing themselves as appearing like grasshoppers before the Anakites, we must bear in mind the universal practice among the nations of the East to express their astonishment in the most extravagant style of hyperbole. The giants of Greek mythology are believed by some to represent the struggle of the elements of nature against the gods, that is, against the order of creation. They were said to hurl mountains and forests against Olympus, disdaining the lightnings of Jupiter, &c. Giants, indeed, make a very considerable figure in the fabulous history of every nation; but, like ghosts and fairies, they have always vanished at the approach of science and civilization. The fossil bones which gave currency to the belief of their existence, have upon minute inquiry been found generally to belong to elephants, whales,&c.

GIAOUR, a word literally signifying *dog* in the Turkish language; and commonly applied by the Turks to designate the adherents of all religions except the Mohammedan, but more particularly Christians.

GIB'BOUS, in astronomy, a term applied to the enlightened part of the moon, during her course from full to new, when the dark part appears falcated or horned, and the light part convex or gibbous.

GIB'ELINES, or GHIB'ELINES, a faction in Italy, in the 13th century, who were the opponents of another faction called the *Guelfs* [which see.]

GIE'SECKITE, a mineral of a rhomboidal form and compact texture, of a gray or brown colour, and nearly as hard as calcareous spar.

GIL'BERTINE, one of a religious order, so named from Gilbert, lord of Sempringham in Lincolnshire.

GIL'DA MERCATO'RIA, in law, mercantile meetings, assemblies, or corporate bodies.

GILL, the organ of respiration in fishes, consisting of a cartilaginous or bony arch, attached to the bones of the head, and furnished on the exterior convex side with a multitude of vascular fibrils of a red colour. The water is admitted by the gill-opening, and acts upon the blood as it circulates in the fibrils.——*Gill-flap*, a membrane attached to the posterior edge of the lid of the gill, immediately closing the gill-opening.

GILL, (pron. *jill*), a measure of capacity, containing the fourth part of a pint.—— Among miners, a measure equal to a pint.

GIL'LYFLOWER, in botany, the name of certain plants. The *clove gillyflower* is of the genus Dianthus, or carnation pink; the *stock gillyflower*, is the Cheiranthus; and the *queen's gillyflower*, the Hesperis.

GILT'HEAD, in ichthyology, a genus of fishes, the *Sparus*, of many species; so named from their colour, or from a golden spot between their eyes.

GIM'BAL, a brass ring by which a sea compass is suspended in its box, by means of which the card is kept in a horizontal position, notwithstanding the rolling of the ship.

GILD'ING, the art of covering anything with gold, either in a foliated or liquid state. The beauty of gold has induced many attempts to imitate its appearance, and hence several methods of gilding have been invented. The art of gilding, at the present day, is performed either upon metals, or upon wood, leather, parchment, or paper; and there are three distinct methods in general practice; namely, *wash*, or *water gilding*, in which the gold is spread, whilst reduced to a fluid state, by solution in mercury; *leaf gilding*, either burnished or in oil, performed by cementing thin leaves of gold upon the work, either by size or by oil; and *japanner's gilding*, in which gold dust or powder is used instead of leaves. When gold is to be applied to a body that is of metal, the surface is previously covered with some gluey substance or size: and when the body is to be exposed to the injuries of the weather, a composition of drying oil and yellow ochre is used in place of the water-size. In the process of gilding metals, the surface is first cleansed, and then the leaves applied, which, by means of burnishing, and a certain degree of heat, are made to adhere in the manner desired. Gold is also sometimes fixed on metals, by previously reducing it into an amalgam or paste, with mercury. With this amalgam, the metal to be gilded is covered; and, on the application of heat sufficient to evaporate the mercury, nothing is left but the gold, which is afterwards burnished. It is also performed by diluting a solution of gold in nitro-muriatic acid, with alcohol, and applying it to the clean surface of the metal. Gold is also applied to glass, porcelain, and other vitrified substances, of which the surfaces, being very smooth, are capable of perfect contact with the gold leaves. This gilding is so much the more excellent as the gold is more exactly applied, which done, the articles are exposed to a certain degree of heat, and

IN THE FABULOUS STORIES OF MYTHOLOGY, WE READ OF GIANTS WITH FIFTY HEADS, A HUNDRED ARMS, AND SERPENTS INSTEAD OF LEGS.

GOLD-LEAF CAN BE REDUCED TO THE THREE-HUNDRED THOUSANDTH PART OF AN INCH, AND GILDING TO THE TEN-MILLIONTH PART.

AS GINGER-BEER RETAINS ITS CARBONIC ACID IN THE GLASS FOR A CONSIDERABLE TIME, IT IS THE MOST REFRESHING BEVERAGE IN HOT WEATHER.

GYPSIES WERE EXPELLED FRANCE IN 1560, AND IN 1580 AN ACT OF PARLIAMENT WAS PASSED AGAINST THEIR ITINERANCY IN ENGLAND.

afterward slightly burnished; or a more substantial gilding is fixed upon glass by the use of powder of gold mixed with a solution of gum-arabic, or with some essential oil and a small quantity of borax.

GIN, or GENEVA, a hot fiery spirit formerly drawn from oats, barley, or malt, redistilled with the addition of berries of the *genievre* or juniper tree, but now made principally of the oil of turpentine and malt spirits. The Hollands gin is manufactured chiefly at the village of Schiedam, and is drawn from wheat or rye and juniper berries. The English gin is a destructive drink, much resorted to by the lower orders; and their palates are so vitiated by its use, as to render purer spirits in a manner insipid to them.

GIN'GER, in botany, *amomum zingiber*, is an East Indian plant, which is also cultivated to a considerable extent in Jamaica and other West India islands. The root is of the size of a finger, knotty, irregular, and creeping. It possesses an aromatic, pungent flavour; makes an excellent preserve, and is used medicinally as a carminative.

GIN'GLYMUS, in anatomy, a species of articulation resembling a hinge. That species of articulation in which a bone partly receives and is partly received by the other, so as to admit only of flexion and extension, is called *angular ginglymus*.

GIN'SENG, a plant of the genus *Panax*, found in the northern parts of Asia and America. It has a jointed, fleshy, taper root, about the size of one's finger, which when dry is of a yellowish white colour, with a mucilaginous sweetness in the taste, accompanied with a slight bitterness. The Chinese value the ginseng highly, and, as well as the Asiatics in general, think it almost an universal medicine. They have recourse to it in all diseases, and, in short, have no confidence in any medicine unless in combination with it; but the virtues most generally ascribed to ginseng, are those of a restorative, a provocative, and a cordial.

GIRA'FFE, the CAMELOPARD, [which see.] In addition to the description which we have before given of this animal, we here extract a few lines relative to the speed and habits of the giraffe, from a very interesting account communicated to the Secretary of the London Zoological Society (January, 1836) by M. Thibaut, who, in company with the Arabs, had captured several of these animals. "The first run of the giraffe is exceedingly rapid. The swiftest horse, if unaccustomed to the desert, could not come up with it unless with extreme difficulty. If the giraffe reaches a mountain, it passes the heights with rapidity: its feet, which are like those of a goat, endow it with the dexterity of that animal; it bounds over ravines with incredible power; and horses cannot, in such situations, compete with it. The giraffe is fond of a wooded country; the leaves of trees are its principal food, which it takes leaf by leaf, collecting them from the trees by means of its long tongue. It rejects the thorns, and in this respect differs from the camel. It is extremely fond of society, and is very sensible. I have observed one of them shed tears when it no longer saw its companions or the persons who were in the habit of attending to it."

GIP'SIES, or GYP'SIES, a wandering tribe, or race of vagabonds, spread over the greater part of Europe, and some parts of Asia and Africa; strolling about and subsisting mostly by theft, low games, and fortune-telling. The name is supposed to be corrupted from *Egyptian*, as they were formerly thought to have come from Egypt; but it is now believed they are of Indian origin, and that they belonged to the race of the Sindes, an Indian caste, which was dispersed, in 1400, by the expeditions of Timour. Their language is the same throughout Europe with but little variation, and even now resembles the dialect of Hindostan. In short, the late Bishop Heber relates, in his Narrative of a Journey through the Upper Provinces of India, that he met with a camp of gypsies on the banks of the Ganges, who spoke the Hindoo language as their mother tongue; and he further observes, that he found the same people in Persia and Russia. Gypsies are remarkable for the yellow brown, or rather olive colour of their skin; the jet black of their hair and eyes; the extreme whiteness of their teeth; and for the symmetry of their limbs, which distinguishes even the men, whose general appearance, however, is repulsive and shy. Though some occasionally follow a trade or honest calling, they rarely settle permanently anywhere. Wherever the climate is mild enough, they are found in forests and deserts, in companies. They seldom have tents, but seek shelter from the cold of winter in grottoes and caves, or they build huts, sunk some feet in the earth, and covered with sods laid on poles. They are fond of instrumental music, which they chiefly practise by the ear, and their lively motions are remarkable in their own peculiar dances. The youthful gypsies traverse the country, the men obtaining their living by gymnastic feats, tricks, &c., while the women invariably practise fortune-telling and chiromancy. They are not nice in their food, but eat all kinds of flesh; even that of animals which have died a natural death. Brandy is their favourite beverage; tobacco their greatest luxury; both men and women chew and smoke it with avidity, and are ready to make great sacrifices for the sake of satisfying this inclination. As for religion they have no settled notions or principles: amongst the Turks they are Mohammedans; in Christian countries, if they make any religious profession at all, they follow the forms of Christianity, without, however, caring for instruction, or having any interest in the spirit of religion. They marry with none but their own race, but their marriages are formed in the rudest manner, and when a gypsy becomes tired of his wife, he will turn her off without ceremony.

GIR'ASOL, a mineral of a white or bluish white colour, but which when turned towards the sun or any bright light reflects a reddish tint; hence its name.

GIRD'ER, in architecture, the principal piece of timber in a floor. Its end is usually fastened into the brestsummers, and the joists are framed into it at one end.

GIR'ONDISTS, a republican party in France, of a character less exceptionable than many who figured in the dreadful scenes of the revolution. They obtained their appellation from several of their most distinguished members having come from the department of the Gironde; and they were chiefly celebrated by their fatal opposition to the mountain party in the convention, who eventually brought most of them to the guillotine or proscribed them.

GIR'OUETTE (*French*, weathercock), a term applied to numerous public characters in France, who, during the revolutionary era, turned with every political breeze. To mark these, a *Dictionnaire des Girouettes* was published, containing their names, &c., with a number of weathercocks against each, corresponding to the number of changes in the individual's political creed. [In our "Biographical Treasury" we have given the lives of the most important of these—not indeed for their merits, but for the influence they severally possessed, and their wanton exercise of power during that unparalleled period in the history of nations.]

GIR'ROCK, in ichthyology, the *Lacertus*, a species of gar-fish.

GIV'EN, a term much used by mathematicians, to denote something supposed to be known. Thus, if a magnitude be known, it is said to be a *given* magnitude, if the ratio between two quantities be known, these quantities are said to have a *given* ratio, &c. &c.

GLA'CIERS, immense masses or fields of ice which accumulate in the valleys between high mountains, from the melting of the snow at their top, and which, owing to their elevation, generally remain solid. The ice of the glaciers is entirely different from that of the sea and river water. It is not formed in layers, but consists of little grains of congealed snow; and hence, though perfectly clear, and often smooth on the surface, it is not transparent. As glaciers, in some positions, and in hot summers, decrease, they often also increase for a number of years so as to render a valley uninhabitable. Their increase is caused partly by alternate thawing and freezing; their decrease, by the mountain rivers, which often flow under them, and thus form an arch of ice over the torrent. In the Tyrol, Switzerland, Piedmont, and Savoy, the glaciers are so numerous that they have been calculated to form altogether a superficial extent of 1484 square miles.

GLA'CIS, in fortification, a mass of earth serving as a parapet to the covered way, having an easy slope or declivity towards the champaign or field.

GLA'DIATE, in botany, an epithet for the legume of a plant resembling a sword in shape.

GLA'DIATORS, in antiquity, combatants who fought at the public games in Rome, for the entertainment of the spectators. They were at first prisoners, slaves, or condemned criminals; but afterwards freemen fought in the arena, either for hire, or from choice. The games were commenced by a *prælusio*, in which they fought with weapons of wood, till, upon a signal, they assumed their arms, and began in earnest to fight in pairs. In case the vanquished was not killed in the combat, his fate was decided by the people. If they wished to save the life of the vanquished gladiator, they signified the same by clenching the fingers of both hands between each other, and holding the thumbs upright, close together; the contrary was signified by bending back their thumbs. The first of these signals was called *pollicem premere*, the second *pollicem vertere*. The victors were honoured with a palm branch, a sum of money, or other marks of the people's favour; and they were not unfrequently released from further service, and received as a badge of freedom, the *rudis*, or wooden sword.

GLAD'IOLE, in botany, the Sword-lily, a plant of the genus *Butomus* or Flowering-rush, and also of the genus *Lobelia* or Cardinal-flower.

GLA'DIUS, (*Latin*, a sword): whence *jus gladii*, or right of the sword, is used in our ancient Latin authors, and in our Norman laws, for supreme jurisdiction; and it is probably from hence that, at the creation of an earl, he is *gladio succinctus*, to denote his having a jurisdiction over the county.

GLAD'WIN, in botany, a plant of the genus *Iris*.

GLAIR, the white of an egg; or any viscous transparent substance resembling it.

GLAND, in anatomy, a small hollow follicle, formed by the convolution of a great number of vessels, and covered with a membrane, usually provided with an excretory duct, and destined to separate some particular fluid from the mass of blood, or to perfect the lymph. Glands have been divided into *simple*, *compound*, *conglobate*, and *conglomerate*, from their structure; but a more proper division is into *lymphatic* and *secretory*. Some glands are hard and firm, and others extremely soft and tender: of the latter kind in particular are the glands situated in the articulations of the bones of the several parts of the body. They differ also very considerably in their colour, figure, and uses: some of them are salival, mucous, and lymphatic; others are mucilaginous, sebaceous, and waxy; others lachrymal, pituitary, &c. The excretory duct of a gland is that through which the fluid of the gland is excreted. The vessels and nerves of glands always come from the neighbouring parts, and the arteries appear to possess a high degree of irritability.

GLAN'DERS, a virulent disease in horses, which shows itself by a discharge of mucus from the nostrils.

SEVERAL ANIMALS HAVE GLANDS AND BAGS SECRETING OFFENSIVE SUBSTANCES, AND CAN EMIT FETID MATTER WHEN PURSUED.

GLANDIFEROUS, in botany, an epithet applied to trees which bear acorns or other nuts, as the beech and oak.

GLASS, a hard, brittle, transparent, factitious substance, formed by the fusion of siliceous and alkaline matter. Pliny ascribes its origin to accident. Certain merchants, as he relates, were driven into the mouth of the Belus, a river in Syria, by stress of weather; and being obliged to continue there, and dress their victuals near the shore, where they used kali for fuel, the ashes of the herb mixed with the sand or stones, and produced glass: a phenomenon which, being known, induced the people of Sidon to pursue the hint it afforded, and, eventually, to establish the manufacture in question among the number of human arts. Whether or not this account is to be relied on we have not the means of judging; but we can readily agree with Dr. Johnson, who says, "By some fortuitous liquefaction was mankind taught to produce a body at once in a high degree solid and transparent, which might admit the light of the sun, and exclude the violence of the wind; which might extend the sight of the philosopher to new ranges of existence, and charm him at one time with the unbounded extent of the material creation, and at another with the endless subordination of animal life; and, what is yet of more importance, might supply the decays of nature, and succour old age with subsidiary sight. Thus was the first artificer in glass employed, though without his own knowledge or expectation. He was facilitating and prolonging the enjoyment of light, enlarging the avenues of science, and conferring the highest and most lasting pleasures; he was enabling the student to contemplate nature, and the beauty to behold herself." Silica, formerly styled the earth of flints, which constitutes the basis of all commercial glass, is infusible by itself in the strongest fire of our furnaces; but its vitreous fusion is easily effected by a competent addition of potash or soda, either alone or mixed with lime or litharge. The window-glass manufacture was first begun in England in 1557, in Crutched Friars, London; and fine articles of flint-glass were soon afterwards made in the Savoy House, Strand. In 1635 the art received a great improvement from Sir Robert Mansell, by the use of coal fuel instead of wood. The first sheets of blown glass, for looking-glasses and coach windows, were made in 1673 at Lambeth, by Venetian artisans employed under the patronage of the duke of Buckingham. The casting of mirror-plates was commenced in France about the year 1688, by A. Thevart; but in excellence and cheapness, the French mirror-plate has been for some time rivalled by the English. There are five distinct species of glass, each requiring a peculiar mode of fabrication, and peculiar material: 1. Bottle glass, which is the coarsest and most simple of any. 2. Broad or coarse window glass; of which there is an improved kind now made near Birmingham, and called British or German plate. 3. Crown glass, or the best window glass, formed in large circular plates. 4. Flint glass, crystal glass, or glass of lead. 5. Plate or fine mirror glass. The materials of every kind of glass are vitrified in pots made of a pure refractory clay. The glass-pots are placed round a dome-shaped furnace, built upon arches, and open beneath for the free admission of air; there are generally six in each furnace, and they are entirely enclosed, except at an orifice on the side opening into a small recess formed by the alternate projection of the masonry and the flues, in which the workmen stand. Coal is the fuel employed, and the furnace is so built that a rapid current of flame may be directed round each glass-pot, which afterwards passes out with the smoke into the dome and chimney, heating a broad covered shelf in its passage, which is the annealing oven. The materials, or fret, being fused, and the impurities removed, it gradually becomes clearer, abundance of air-bubbles are extricated, and at length the glass appears uniform and complete; the fire round each individual pot is then damped, till its contents acquire a consistency fit for working: the whole process requiring about forty-eight hours from the time the pots are filled. At the working heat, which is a full red, the glass has a peculiarly tenacious consistency, and as it adheres but feebly to polished metals, it is easily wrought and managed with iron tools. Various ornamental forms are also given to the surface of glass vessels by metallic moulds. The mould is usually of copper, with the figure cut on its inside, and opens with hinges to permit the glass to be taken out.—Those readers who consult our pages must be aware that in an article of this nature it is impossible to describe the various manipulations in glass-making, with anything like minuteness of detail; we shall therefore not attempt it, but conclude with a quotation from an old English historian, who, in 1584, thus writes: "Of old time, our country houses instead of glasse did use much lattise, and that made either of wicker or fine rifts of oak in checkerwise. I read also that some of the better sort, in and before the time of the Saxons, did make panels of horne instead of glasse, and fix them in wooden calures (casements); but as horne in windowes is now quite laid down in everie place, so our lattises are grown into disuse, because glasse is come to be so plentiful, and within verie little so good, cheape, if not better than the other."——*Glass-house*, a manufactory in which silex or flint dust, and fixed alkalies are melted, so as to produce a fluid, which, when cold, constitutes glass, but which, while liquid, may be moulded, blown, or drawn into any shape, as before described.——*Glass-Blower*. The materials of glass when fluid, are so perfectly ductile and plastic, that the glass is blown into shapes with the breath of the workman, through an iron pipe, about three feet long, assisted by a few very trifling tools. He dips the end of his blow-pipe

THE GLASS SQUARES IN COTTAGES, &c., ARE CALLED "QUARRIES."

GLASS DOES NOT ACQUIRE THE PROPERTY OF REFLECTING OBJECTS TILL ONE SIDE HAS BEEN COATED WITH TIN AND QUICKSILVER.

into the melting pot, through the hole in the furnace, and the fluid which sticks to the iron is blown with proper skill; a boy generally assisting in the operation, who, while it is still red hot, joins to the blown vessel any peculiar parts. When finished, it is placed in an upper furnace, and kept in a red heat for some hours.

GLASSES, Optical. Glasses intended for optical purposes are spherically ground, and called lenses. They are either convex or concave, and used either as simple magnifiers and spectacles, or for telescopes and microscopes. The grinding of the lenses is performed in brass moulds, either concave or convex, formed to the same curvature as that desired in the lenses; and may be worked either by hand or by machinery.

GLASS'WORT, in botany, the *Salsola*, a plant of many species, all of which may be used in the manufacture of glass. Barilla is the semifused ashes of the *Salsola soda*, which is extensively cultivated in Spain.

GLAU'BERITE, a mineral of a grayish white or yellowish colour, consisting of dry sulphate of lime and dry sulphate of soda.

GLAU'BER-SALT, in chemistry, sulphate of soda, a well known cathartic.

GLAUCO'MA, in surgery, a disease in the eye, in which the crystaline humour has a greenish or bluish gray appearance, and its transparency is diminished.

GLA'ZING, in the manufacture of pottery, the encrustation of vessels with a vitreous substance, the basis of which is lead. After the ingredients are ground together, they are calcined with a moderate heat; and, when cold, reduced to powder. When wanted, the powder is tempered with water, and laid on the ware by means of a brush. Placed in a furnace, the violent heat soon transforms this coating into a perfect glass.

GLEBE LAND, in law, a portion of meadow or pasture land belonging to a parish church or ecclesiastical benefice.

GLEE, in music, a composition of three or more parts; originally used for convivial purposes.

GLENE, in anatomy, the cavity or socket of the eye, and the pupil. Also any slight depression or cavity receiving a bone in articulation.

GLENOI'DES, in anatomy, a name for two cavities in the lower part of the vertebræ of the neck.

GLI'ADINE, in chemistry, one of the constituents of gluten, a slightly transparent, brittle substance, of a straw colour, and in smell resembling the honeycomb.

GLIM'MER, a mineral, resulting from crystalization, usually appearing in thin, flexible laminæ, which exhibit a high polish and strong lustre. It is an essential ingredient in granite, gneiss, and mica slate.

GLI'RES, the fourth order of the class *Mammalia* in the Linnæan system, including such animals as have two fore teeth, a cutting one in each jaw, no tusks, and feet with claws formed for running, as the beaver, the hare, &c.

GLIS'CERE, in medicine, a term sometimes applied by physical writers to the natural heat and increase of spirits; as also to the exacerbation of fevers which return periodically.

GLISCHROC'HOLOS, in medicine, an epithet for bilious viscid excrements.

GLOBE, in practical mathematics, an artificial spherical body, on the convex surface of which are represented the countries, seas, &c. of our earth; or the face of the heavens, with the several circles which are conceived upon them. That with the parts of the earth delineated upon its surface, is called the *terrestrial globe;* and that with the constellations, &c. the *celestial globe*. Their principal use, besides serving as maps to distinguish the earth's surface, and the situation of the fixed stars, is to illustrate and explain the phenomena arising from the diurnal motion of the earth. They are consequently of the highest importance in acquiring a knowledge of geography and astronomy. [See Earth, Astronomy, Amillary Sphere, &c.]

GLOBULA'RIA, in botany, a genus of plants, class 4 *Tetandria*, order 1 *Monogynia*. The species are perennials. The leaves of the *Globularia Alypum* are sometimes used medicinally, and are said to act as a powerful but safe cathartic.

GLOB'ULAR CHART, a name given to the representation of the surface, or of some part of the surface of the terrestrial globe upon a plane, wherein the parallels of latitude are circles, nearly concentric, the meridian curves bending towards the poles, and the rhumb-lines are also curves.

GLOB'ULE, a small particle of matter of a spherical form; a word particularly applied to the red particles of blood, which swim in a transparent serum, and may be discovered by the microscope.

GLOM'ERATE, in anatomy, an epithet for a gland formed of a conglomeration of sanguineous vessels, having no cavity, but furnished with an excretory duct, as the lachrymal and mammary glands.

GLOMERA'TUS, in botany, an epithet that signifies growing together in a globular form, as *spica glomerata*, a spike having the spikelets variously heaped together: *panicula glomerata*, a glomerate panicle having the flowers heaped pretty close together.

GLOSSA'GRA, in medicine, a rheumatic pain in the tongue.

GLOSS'ARY, a dictionary or vocabulary, explaining obscure or antiquated words found in old authors.

GLOSSO-PHARYNGE'AL NERVES, in anatomy, the ninth pair of nerves. They arise from the processes of the *cerebellum*, which run to the *medulla spinalis*, and terminate by numerous branches in the muscles of the tongue and pharynx.

GLOS'SOCELE, in medicine, an extrusion of the tongue.

GLOT'TIS, in anatomy, the narrow opening at the upper part of the *asperia arteria* or wind-pipe, which, by its dilatation and contraction, contributes to the modulation of the voice.

GLOW'-WORM, in entomology, an insect

THERE IS NO AUTHENTIC EVIDENCE OF GLASS BEING USED IN WINDOWS PREVIOUSLY TO THE THIRD OR FOURTH CENTURY.

THE VALUE OF GLASS INCREASES AS THAT OF THE SIZE OF THE SQUARES.

NITRIC ACID, WITH THE AID OF HEAT, CONVERTS GLUE INTO MALIC ACID, OXALIC ACID, A SUBSTANCE LIKE SUET, AND INTO TANNIN.

COMMON GLUE IS NOT SOLUBLE IN ALCOHOL, BUT IS PRECIPITATED IN A WHITE, COHERENT, ELASTIC MASS: A LITTLE CHLORINE SUFFICES FOR IT.

of the genus *Lampyris*, remarkable for its luminous appearance in the dark, which proceeds from a vivid phosphoric light with which nature has provided it. The glow-worm is seen about the months of June, July, and August. The light which is perceived towards the lower extremity of its body, is produced by a phosphoric liquor. The insect has the power of varying the degree of its brightness, and even of wholly extinguishing it; so that if an observer approach the spot where he has perceived it, it often happens that the creature renders itself wholly invisible. It seems probable, that it does not emit light, either when moving, or when apprehensive of danger. The lights, which are perceived along the ground, are never seen to change their places; and if the insect be taken, and carried in such a manner that it is itself at rest, it will shine during the whole journey, yet when set down, even in the dark, it will immediately withdraw its luminousness. If, in this case, a light be procured, it will be found that it is crawling in search of a station.—So much has been written on the glow-worm's light, and so many theories have been advanced, that we may, perhaps, be excused for devoting more space than the subject may appear to deserve, in noticing what has been said on the economy of this curious insect. A correspondent of the "Philosophical Magazine" describes it as follows: "The female deposits her eggs in the month of June or July, among moss, grass, &c. These eggs are of a yellow colour, and emit light. After remaining about five or six weeks, the larvæ break their shells and make their appearance; at first they appear white, and are very small, but they soon increase in size, and their colour changes to a dark brown, or nearly black. The body of the larva is formed of eleven rings. It has six feet, and two rows of reddish spots down the back. It emits light in the dark; this light arises from the last ring of its body under the tail, and appears like two brilliant spots when attentively examined. The larvæ are seen creeping about, and shining during the fine nights of autumn, and the light they emit is to direct them to their food. They feed on small snails, the carcases of insects, &c. They frequently cast off their skins: after the expiration of about one year and nine months from their birth, they arrive at their perfect size. They then cease to eat, cast off their skin, and assume another appearance. The form of the perfect insect may be discovered through a thin skin that covers them. After remaining in this state two or three weeks, (scarcely ever moving) they throw off their last skin and arrive at perfection. The male then appears a perfect beetle, with wings and cover to the same. The female, on the contrary, has neither wings, nor wing-cases; she is larger than the male, and of a lighter colour. It is the female that principally shines in a perfect state. Her light is far superior to that emitted by the larvæ, and arises from the three last rings of the body on the lower side." In Mr. John Murray's "Researches" the cause, nature, and uses of this phenomenon are skilfully treated; and he thus concludes his ingenious observations: "The use to which it is subservient in the animal economy, it is difficult to ascertain—'we see but in part.' Its very existence, however, proves that it is a condition indispensable to its being. Providence has tipt the insect with living fire—a non-material ignition—burning, yet not consumed—even extinguished by a temperature which the animal system, with which it is so singularly interwoven, cannot withstand. It may be a 'lamp to its path,' to guide it to its food, subserving the additional purpose of warding off its enemies—while it may also be the luminous point that directs the nightingale to its proper prey."

GLU'CINE, or GLUCI'NA, a very rare earth, of a sweetish taste, which was discovered in analyzing the beryl. It is infusible in the fire and insoluble in water, but combines with acids, making with them soluble salts.

GLUE, inspissated animal gluten; a tenacious viscid matter, which serves as a cement. It is made from the parings of hides and other offals by boiling them in water, then straining off the impurities and boiling them again. The best glue is that which is oldest; and the surest way to try its goodness, is to lay a piece to steep three or four days, and if it swell considerably without melting, and when taken out resumes its former dryness, it is excellent.

GLUME, in botany, the calyx or corolla of grasses.

GLU'TEAL, in anatomy, an epithet for a branch of the hypogastric or internal iliac artery, which supplies the *gluteal muscles*; the latter being three large muscles on each side of the rump.

GLU'TEN, an adhesive and elastic substance, similar to glue, which is procured by the decomposition of wheat flour or other vegetable substances. It contributes much to the nutritive quality of flour, and gives tenacity to its paste. It has some resemblance to animal tendon or membrane, is very tenacious, and may be used as a cement for broken porcelain vessels. When dried in the air or a stove, gluten diminishes greatly in size, becomes hard, brittle, glistening, and of a deep yellow colour. It is insoluble in ether, in fat and essential oils, and nearly so in water.

GLU'TINOUS, in botany, an epithet applied to a leaf, &c. which is besmeared with a slippery moisture.

GLUTTON, in zoology, an animal of the genus *Ursus*, found in the north of Europe and Siberia. It grows to the length of three feet, but has short legs, and moves slowly. It is very voracious, and in order to catch its prey, it climbs a tree, and from that darts down upon its victim.

GLY'CERINE, in chemistry, a sweet substance which may be extracted from fats. Its constituent parts are carbon, hy-

drogen, and oxygen. Water combines with it in almost all proportions; alcohol dissolves it; nitric acid converts it into oxalic acid; and sulphuric acid transforms it into sugar.

GLY'CINE, in botany, a genus of the *diadelphia decandria* class of plants, with a papilionaceous flower, and an oblong bilocular pod, containing a number of kidney-shaped seeds, of a scarlet colour, spotted with black.

GLYCO'NIAN, or GLYCON'IC, a kind of verse in Greek and Latin poetry, consisting of three feet, a spondee, a choriamb, and a pyrrhic.

GLYPH, in sculpture and architecture, any channel or cavity intended as an ornament.

GLYPTOG'RAPHY, a description of the art of engraving on precious stones.

GNAT, in entomology, the *Culex*, a genus of insects, whose cylindrical body is composed of eight rings. They have six legs, and their mouth is formed by a flexible sheath, inclosing bristles pointed like stings. The gnat of this country is comparatively harmless; but those of warmer climates are peculiarly annoying, especially in marshy situations. They pursue the inhabitants, enter the houses, especially in the evening, announcing their arrival by a sharp buzzing noise. The pain of the wound they inflict is occasioned by a venomous fluid which they inject into it; the best remedy for which are preparations of ammonia. It is a curious fact in entomology, that it is only the females which are thus tormenting.

GNEISS, in mineralogy, a species of aggregated rock, composed of quartz, felspar, and mica, of a structure more or less slaty. It passes on one side into granite, from which it differs in its slaty structure, and on the other into mica slate. It is rich in metallic ores. With regard to the distribution of gneiss, it may be remarked that it is the principal rock of very extensive districts. It forms the declivities of immense mountain chains of granite, and even constitutes entire mountains of itself. It is the predominating rock of all the north of Europe: it abounds also in the southern Alps and the Pyrenees; forms the loftiest chains of the Andes of Quito; and is found plentifully in the United States.

GNOMES, spirits with which the imagination of certain philosophers has peopled the interior parts of the earth, and to whose care mines, quarries, &c. are assigned.

GNO'MON, in dialling, the style or pin of a dial, which by its shadow shows the hour of the day. The word is Greek, and literally signifies something that makes a thing known. It represents the axis of the earth.——*Gnomon*, in geometry, a figure formed by the two complements with either of the parallelograms about the diameter.——In astronomy, a style erected perpendicular to the horizon, in order to find the altitude of the sun.

GNOMON'ICS, the art or science of dialling, or of constructing dials to show the hour of the day by the shadow of a gnomon.

GNOMIOMET'RICAL. The *gnomiometrical telescope* and *microscope* is an instrument for measuring the angles of crystals by reflection, and for ascertaining the inclination of strata, and the apparent magnitude of angles when the eye is not placed at the vertex.

GNOSTICS, a sect of philosophers that arose in the first ages of Christianity, who pretended they were the only men who had a true knowledge of the Christian religion. They formed for themselves a system of theology, agreeable to the philosophy of Pythagoras and Plato, and fancied they discovered deeper mysteries in the Scriptures than were perceived by those whom they considered as simple and ignorant. They held that all natures, intelligible, intellectual, and material, are derived by successive emanations from the Deity. In process of time, the name designated sectarians of various descriptions, but who all agreed in certain opinions; and the tenet which seems most particularly to distinguish the Gnostic name, was the existence of two first principles, or deities, the one the author of good, and the other of evil.

GNU, in zoology, a species of antelope, having horns bent forward at the base and backward in the middle. It is a native of Southern Africa; and its form partakes of that of the horse, the ox, and the deer. The gnu is a lively capricious animal; and when irritated, it expresses its resentment by plunging, curveting, tearing the ground with its hoofs, and butting with its head. These animals feed in large herds, and it is only when stragglers have been accidentally separated from the herd, that any of them are found in a solitary state.

GOAT, in zoology, a quadruped of the genus *Capra;* nearly the size of a sheep, but stronger, less timid, and more agile. The horns are hollow, erect, and scabrous. They delight to frequent rocks and mountains, and subsist on scanty coarse food. The milk of goats is sweet and nourishing, and their flesh furnishes provisions to the inhabitants of countries where they abound. But the skin is the most valuable part of this animal. It is prepared for a variety of purposes, takes the dye better than any other skin, and is well known under the name of *morocco.*——The *Cashmere goat*, from whose backs are procured the materials for the manufacture of Cashmere shawls, is smaller than the common domestic goat, and has long, silky, fine hair, not curled, as in the Angora goat.——The *Angora goat* is also furnished with soft, silky hair, of a silver-white colour, hanging down in long curling locks. From the wool of this goat the finest camlets are made.

GOAT'S-BEARD, in botany, a plant of the genus *Tragopogon.*

GOAT'S-THORN, in botany, a plant of the genus *Astragalus.*

GOAT'-SUCKER, in ornithology, an

American bird, of the genus *Caprimulgus*; so called because it was supposed to suck the teats of the goats. Like the owl, this bird is seldom seen in the day-time, unless disturbed, or in dark and gloomy days when its eyes are not dazzled by the bright rays of the sun.

GOBELINS, or HOTEL-ROYAL DE GOBELINS, a celebrated academy for tapestry-drawing, and manufactory of tapestry, erected in the suburb of St. Marcel, at Paris, by Louis XIV. in the year 1666. The place was previously famous on account of the dyeing manufactory established there by Giles and John Gobelins, in the reign of Francis I. These eminent dyers discovered a method of producing a beautiful scarlet, which has ever since been known by their name; and so extensive has been their fame, that not only the colour, but the house in which their business was carried on, and the river they made use of, are called *Gobelins*.

GO'BY, (the *Gobius* of Linnæus) in ichthyology, a salt-water fish, of the acanthopterygious genus, of which there are many species, but none of them are much esteemed as food.

GOD, the appellation which we give to the Creator and Sovereign of the Universe; the Supreme Being.——The words *god* and *goddess* are also the appellatives common to the heathen deities; which they divided into *dii majorum gentium*, and *dii minorum gentium*; that is, into the superior and inferior gods. Another division was taken from their place of residence; thus there were celestial, terrestrial, infernal, marine, and sylvan gods. They were also divided into animal and natural gods: the animal gods were mortals, who had been raised to divinity by ignorance and superstition; and the natural gods, the parts of nature, such as the stars, the elements, mountains, rivers, &c. There were also deities, who were supposed to preside over particular persons: some had the care of women in child-birth; others, the care of children and young persons; and others were the deities of marriage. Each action, virtue, and profession had also its particular god: the shepherds had their Pan; the gardeners, their Flora; the learned, their Mercury and Minerva; and the poets, their Apollo and the Muses.

GOD'FATHER, and GOD'MOTHER, the man and woman who are sponsors for a child at baptism; who promise to answer for his future conduct, and solemnly promise that he shall follow a life of piety and virtue, by this means laying themselves under an indispensable obligation to instruct the child and watch over his conduct. This practice is of great antiquity in the Christian church, and was probably instituted to prevent children being brought up in idolatry, in case their parents died before they arrived at years of discretion.

GOD'WIT, in ornithology, a fowl of the grallic order and genus *Scolopax*. It has a bill four inches long; the feathers of the neck, head, and back, are of a reddish brown; those on the belly white, and the tail is regularly barred with black and white. This fowl frequents fens and the banks of rivers, and its flesh is esteemed a great delicacy.

GOI'TRE, in medicine, a large tumour that forms gradually on the throat between the trachea and the skin.

GOLD, a precious metal of a bright yellow colour, and the most ductile and malleable of all the metals. It is the heaviest metal except platina, being the most solid and the least porous: and not being liable to be injured by air, it is well fitted to be used as coin. It is wholly incapable of rust, and not sonorous when struck upon. Its lustre does not equal that of steel, platina, or silver, but it surpasses the other metals in this respect. It requires a strong fire to melt it, remaining unaltered in the degree of heat that fuses tin or lead, but running with a less potent heat than is necessary to the fusing of iron or copper. It does not retain its colour till the time of its melting, but becomes ignited and white before it runs, and when in fusion, it appears of a pale bluish green colour on the surface. It amalgamates the most readily of all the metals with quicksilver. When in a state of fusion, it very easily and very intimately blends itself with silver, and when mixed with that metal, will also run into a mass with iron. The ductility and malleability of gold is such, that one grain of it will cover upwards of fifty square inches, and an ounce is capable of being extended in the form of wire many hundred miles. The heat of the strongest furnace does not change the metallic properties of gold; but by a long continued application of the violent power of the sunbeams, collected in the focus of a burning-glass, and instantaneously by means of the electric fluid, it may be calcined, and even reduced to glass. Gold is found in beds of quartz, sand-stone, &c. and also in many rivers, particularly in Peru, in minute and irregular grains, which are known by the name of *gold dust*. The mineral formations in which this metal occurs, are the crystaline primitive rocks, trap rocks, and alluvial grounds. It never predominates to such a degree as to constitute veins by itself. It is either disseminated or spread out in thin plates or grains on their surface, or implanted in their cavities under the shape of filaments or crystalized twigs. The principal use of gold, as is well known, is in coinage. It has been with mankind, from time immemorial, the representative sign of every species of property. Even before the art of coining was invented, it passed for money in the condition in which it was found in the earth; and in this form it still enjoys a currency in many parts of Africa. It is rarely employed in a state of perfect purity, but is almost universally alloyed with copper, or with silver, in order to increase its hardness.

GOLDBEATERS' SKIN, the skin or membrane of any animal, particularly the *intestinum rectum* of an ox, which goldbeaters lay between the leaves of the metal

SOUTH AMERICA FURNISHES THREE AND A HALF TIMES MORE GOLD, AND TWELVE TIMES MORE SILVER, THAN EUROPE, ASIA, AND AFRICA.

IN FORTY YEARS (FROM 1790 TO 1830) THE GOLD AND SILVER DUG FROM ALL THE MINES IN THE WORLD, AMOUNTED TO 1880 MILLIONS STERLING.

while they beat it, whereby the membrane is rendered very thin, and made fit to be applied to cuts and fresh wounds.

GOLDEN NUMBER, in chronology, is that number which indicates the year of the lunar cycle, for any given time. It was called the Golden Number, because in the ancient calendar it was written in letters of gold, on account of its great usefulness in ecclesiastical computations, especially in fixing the time of Easter. It was likewise called the Prime, because it pointed out the first day of the new moon, *primum lunæ*. To find the Golden Number, add 1 to the year of our Lord, divide the sum by 19, and the remainder is the Golden Number, the quotient at the same time expressing the number of cycles which have revolved from the beginning of the year preceding the birth of Christ.

GOLDEN-FLE'ECE, in the mythological fables of the ancients, signified the skin or fleece of the ram upon which Phryxus and Hella are supposed to have swum over the sea to Colchis; which being sacrificed to Jupiter, its fleece was hung upon a tree in the grove of Mars, guarded by two brazen-hoofed bulls, and a monstrous dragon that never slept; but was at last taken and carried off by Jason and the Argonauts.

GO'LDEN-ROD, in botany, a genus of plants, belonging to the natural order *Compositæ*, containing many species, whose brilliant yellow flowers are very conspicuous in the autumnal months. They are perennial, chiefly herbaceous, with simple, undivided leaves, and bear numerous small flowers, disposed in spikes or panicles.

GOLD'FINCH, in ornithology, the name of a species of *Fringilla (fringilla carduelis)*, with the wings variegated with black, yellow, and white. The common goldfinch is a very elegantly coloured bird, somewhat smaller than the common sparrow. There are several other species, as the Greenland goldfinch, with a black spotted head, about the size of the common linnet; and the greenish yellow goldfinch, which is a most elegant bird; the fore-part of its head, and the upper part of the throat being covered with fine scarlet-coloured feathers, the top of the head ash-coloured, and the upper part of the body a yellowish-green.

GOLD-FISH', in ichthyology, an elegant fish of a gold colour, of the genus *Cyprinus*, and of the size of a pilchard. It was originally brought from China, and is now kept in small ponds, glass globes or other vessels, by way of ornament. They are said to be very prolific, and are easily bred, requiring scarcely any farther attention than that of frequently changing the water.

GOLD-LEAF', or LEAF-GOLD', gold that is foliated or beaten into a thin leaf. The thickness varies according to the purpose for which it is designed: that which is intended for gold-wire is much thicker than that for the frames of pictures. Gold is beaten on a block of marble, with hammers of polished iron. It is first reduced from the ingot to the thickness of paper; then cut into pieces of about an inch square; placed between skins; beaten thinner; and divided into squares, and again beaten, until it has acquired the necessary degree of thinness. The finished leaves of gold are put up in small books made of single leaves of soft paper, rubbed over with red chalk to prevent adhesion between them. Boyle has observed that a grain of gold, reduced to leaves, will cover a surface of fifty square inches, that each one of these square inches may be divided into 46,656 other little squares, and that, of course, the entire amount of surface derived from one grain of gold is capable of being divided into 2,322,800 parts, each of which is visible to the naked eye. In short, such is the wonderful extension which the gold-beater is enabled to give to this precious metal, that it has been estimated that an equestrian statue, of the natural size, may be gilded with a piece of gold not exceeding in value ten shillings.

GOLD-WI'RE, a cylindrical ingot of silver, superficially gilt, and afterwards drawn through a vast number of holes of different bores (according to the process of wire-drawing) in order to bring it to the requisite fineness, which is sometimes equal to that of a hair. Before each time of drawing, it is covered with wax, to save the gold from being worn away.——*Gold-wire flatted*, the wire already described, flatted between rollers of polished steel, and used in spinning, weaving, lace-making, and embroidery.——*Gold thread*, or *spun gold*, is a flatted silver-gilt wire, wrapped or laid over a thread of yellow silk, by twisting with a wheel and iron bobbins.

GO'LDSMITH, an artisan who manufactures vessels and ornaments of gold and silver. Also, one who deals in gold or silver vessels. The company of goldsmiths were incorporated in the reign of Richard II.

GO'LDYLOCKS, a name given to certain plants of the genera *Crysocoma* and *Gnaphalium*.

GOLF, a game with bat and ball, much practised in the north of England.

GOM'PHOSIS, in anatomy, a species of articulation, wherein one bone is set in the other, like a nail or peg; as the teeth within the jaws.

GOMU'TI, in botany, the *Borassus gomutus*, a species of palm, growing in the Indian islands; from the back of which a valuable fibrous substance is obtained that is manufactured into cordage. It undergoes no preparation but that of spinning and twisting; no material similar to our tar or pitch being necessary, as it possesses, in a remarkable degree, the quality of resisting alternations of heat and moisture.

GONG-GONG, or TAMTAM, a kind of cymbal used by the Chinese, made of copper alloyed with tin.

GON'DOLA, a flat-bottomed boat, generally about thirty feet long and four broad, terminating at each end in a sharp point or peak rising to the height of a man. It is much used at Venice on the canals, and in other parts of Italy, for a passage boat. It

is usually rowed by two men, called *gondoliers*.

GONG, a Chinese musical instrument, of a circular form, made of tin and copper, which vibrates on being struck with a wooden mallet covered with leather.

GONIOM'ETER, an instrument for measuring solid angles, or the inclination of planes.

GOOS'ANDER, in ornithology, a migratory fowl of the genus *Mergus*, the diver or plunger.

GOOSE, a well known domestic fowl, of the genus *Anas*, which exists in a wild as well as a tame state. The gray lay goose, or common wild goose, is the largest of the British species, and is easily tamed: from this sort has sprung the domestic breed. There are, however, many other species.

GOOS'EBERRY, in botany, a shrub (the *Ribes grossularia*) that is set with prickles, and yields a fruit of an oval and globular figure, containing many small seeds in a pulpy substance. It is a bush much cultivated in gardens.

GOOS'EFOOT *(Chenopodium)*, a genus of plants, containing twenty-six species, most of them indigenous to the temperate parts of the eastern continent. Many of the species grow abundantly in waste places throughout Europe; and we are told that the young shoots are sometimes eaten as asparagus. The *Chenopodium quinoa* of Chili is very celebrated in that country, and is carefully cultivated both for the leaves and seeds; the latter of which are used instead of millet.

GOOS'E-NECK, in a ship, a piece of iron fixed on the end of the tiller, to which the lanyard of the whip-staff, or the wheel-rope comes, for steering the ship.

GOOS'EWING, in seaman's language, a sail set on a boom on the lee side of a ship; also the clews or lower corners of a ship's main-sail or fore-sail when the middle part is furled.

GOR'DIAN KNOT, in antiquity, a knot made in the harness of the chariot of Gordius, king of Phrygia, so very intricate, that there was no finding where it began or ended. An oracle had declared that he who should untie this knot should be master of Asia. Alexander having undertaken it, and fearing that his inability to untie it should prove an ill augury, cut it asunder with his sword, and thus either accomplished or eluded the oracle. Hence, in modern language, *to cut the Gordian knot* is to remove a difficulty by bold or unusual means.

GOR'DIUS, the Hair-worm, a genus of the *Vermes Intestina*, of which there are five species. The *Gordius aquaticus* is of the thickness of a hog's bristle, and from six to ten inches long; is found in stagnant waters, and twists itself into various contortions and knots. The head is obtusely conical, with a simple circular terminal pore for a mouth, from which a sort of membrane can be forced by pressure. The skin is smooth, but within an inch of the tail there is a small space which is roughened on the sides with very minute granules. The tail is bifid, the processes short, equal, and obtuse. This singular worm is in perpetual motion and change; and its never-ceasing contortions have a sort of painful character, which involuntarily suggest a comparison of it to "the worm that never dieth."

GORGE, in architecture, the narrowest part of the Tuscan and Doric capitals, lying between the astragal, above the shaft of the column and the annulets.——In fortification, the entrance of a bastion, ravelin, or other outwork.

GOR'GED, in heraldry, bearing a crown, coronet, or the like, about the neck.

GOS'HAWK, in ornithology, a voracious fowl of the genus *Falco*, larger than the common buzzard, but of a more slender shape.

GOS'PEL, a revelation of the grace of God to fallen man through a mediator, including the character, actions, and doctrines of Jesus Christ, with the whole scheme of salvation, as revealed by Christ and his apostles, and handed down to us by the four Evangelists.

GOS'SAMER, a fine filmy substance, like cobwebs, floating in the air in calm clear weather, especially in autumn. It is mostly seen in stubble fields and on furze or low bushes, and is supposed to be formed by a species of spider.

GOSSYP'IUM, Cotton, a genus of plants of which there are ten species; most of these are Asiatic plants, but some are of American growth and culture. [See COTTON.]

GOTH'IC STYLE, in architecture, a style in which pointed arches of greater height than breadth, and a profusion of ornaments, in imitation of leaves and flowers, are the principal characteristics.

GOV'ERNMENT, that form of fundamental rules and principles by which a nation or state is governed. If this power be vested in the hands of one, it is a *monarchy;* if in the hands of the nobility, an *aristocracy;* and if in the hands of the people, or those chosen by them, a *democracy*. The *executive government* is the power of administering public affairs; the *legislative government*, that of making the laws. In England, the executive government is in the king (or queen regnant) and his ministers; but the legislative government is in the parliament, that is, the king, lords, and commons; whence the constitution of England is denominated a *mixed government*.——*Government* is also a post or office which gives a person the power or right to govern or rule over a place, a city, or province, either supremely or by deputation. Thus, the government of Ireland is vested in the lord-lieutenant.——*Government*, in grammar, the influence of a word in regard to construction, as when established usage requires that one word should cause another to be in a particular case or mood.

GOUGE, an instrument or tool, used by various artificers, being a sort of round

"SAFETY AND EQUAL GOVERNMENT ARE THINGS, WHICH SUBJECTS MAKE AS HAPPY AS THEIR KINGS."—WALLER.

"THOSE GOVERNMENTS WHICH CURB NOT, EVILS CAUSE; AND A RICH KNAVE'S A LIBEL ON OUR LAWS."—YOUNG.

hollow chisel for cutting or hollowing out either wood or stone.

GOURD, or CAL'ABASH, a climbing plant, bearing a pulpy edible fruit; allied to the cucumber, melon, squash, &c., and has been cultivated from time immemorial in the warmer parts of Asia and Africa, and also by the aborigines of America, previous to its discovery by the Europeans. The leaves are rounded and slightly viscous; the flowers white, and somewhat stellated; and the fruit large, varying much in shape in different varieties. In Egypt and Arabia the lower classes boil it in vinegar, or make it into a sort of pudding by filling the shell with rice and meat.

GOUT, or ARTHRI'TIS, in medicine, a very painful disease, the principal seat of which is in the joints and ligaments of the feet. It is often periodical or intermitting. It is a disease which seldom attacks young people, and is attended with the secretion of the superfluous earthy matter, which is no longer necessary for the formation of the bones, but which, instead of being carried off by the organs of secretion, is deposited beneath the skin, or accumulates internally, thus producing chalk stones and various internal concretions.

GRACE, in objects of taste, a certain species of beauty, which appears to consist in the union of elegance and dignity.——In theology, the free unmerited love and favour of God; or the divine influence in restraining from sin.——*Days of Grace*, in commercial law, three days allowed for the payment of a bill after it has become due.——The word *grace* is also used in speaking of or to a duke or duchess, as your Grace, his or her Grace.——*The Graces*, among the heathen world, were female beauties deified: they were three in number; Aglaia, Thalia, and Euphrosyne, the constant attendants of Venus.——In music, *graces* are turns, trills, and shakes, introduced for the purpose of embellishment.

GRA'CILIS, in anatomy, a muscle of the leg, so called from its slenderness.

GRADATION, in general, the ascending step by step, or proceeding in a regular and uniform manner. It also means a degree in any order or series. Thus we say, there is a *gradation* in the scale of being; or we observe a *gradation* in the progress of society from a rude state to civilized life.——*Gradation*, in logic, is an argumentation, consisting of four or more propositions, so disposed, as that the atttribute of the first is the subject of the second; and the attribute of the second, the subject of the third; and so on, till the last attribute come to be predicated of the subject of the first proposition.——*Gradation*, in chemistry, a process by which metals are gradually raised to a still higher degree of purity.

GRA'DIENT. The literal meaning of this word is, "moving by steps;" but it has lately been used technically to denote, in reference to railways, their deviation from a level surface to an inclined plane.

GRADUATE, one who has obtained a degree at an university, or from some professional incorporated society, after a due course of study, and suitable examination.

GRAFTING, in horticulture, the process of inserting a branch of one tree into the stock of another, so that it may receive nourishment from it, while at the same time it produces a new tree, like the old one whence the graft was taken. The use of grafting is to propagate any curious sorts of fruits, so as to be certain of their kinds. All good fruits have been obtained accidentally from seeds; and of the seeds of these it is wholly uncertain whether they will produce fruit worthy of cultivation; but when shoots are taken from such trees as bear good fruit, no alteration need be apprehended. The reason of the advantages obtained by grafting is differently explained; but it seems probable that they should be attributed to the greater facility with which the tender cion can assimilate the juices already prepared by the stock, than those which it must draw immediately from the earth, if planted.

GRAIN, the generic name of the seeds of wheat, barley, oats, rice, &c. All kinds of grain contain nutritious particles of a similar character, although they vary, both in their quantity and in their mixture, in various grains; but their most valuable elements are,—*gluten*, which affords the strongest nourishment for the animal body; *fecula* or *starch*, which, though not so nutritious as gluten, seems to render it more digestible; and a *sweet mucilage*, which is more nutritious than starch, but is small in quantity, and renders the grain liable to the vinous and acetous fermentation.——It is likewise the name of a small weight, the twentieth part of a scruple in apothecaries' weight, and the twenty-fourth part of a penny-weight troy.——*Grain* also denotes the component particles of stones and metals, the veins of wood, &c. Hence *cross-grained*, or *against the grain*, is, contrary to the fibres of wood, &c.——*Grains* (in the plural), the husks or remains of malt after brewing, or of any grain after distillation.

GRAINS OF PAR'ADISE, a narcotic pepper, brought from Guinea, and, according to the opinions of some writers, much used by brewers.

GRAL'LÆ, in ornithology, the fourth order of birds, with obtuse bills and long legs, as cranes, snipes, bustards, storks, and ostriches.

GRAL'LIC (from *grallæ*), in ornithology, an epithet given to an order of fowls having long legs, naked above the knees, which fit them for wading in water.

GRAMINA, or GRASSES, the most numerous family of plants, common to all countries, but varied in species by soil and elevation. An English meadow in natural grass often exhibits a hundred several species. But the most productive grasses have been specially cultivated, and we now have fields sown with rye-grass, red clover, trefoil, sanfoin, lucerne, &c. &c., called artificial grasses. Nor must we omit to mention, that the *grasses* include wheat, rye, barley,

"SET ALL THINGS IN THEIR OWN PECULIAR PLACE; AND KNOW THAT ORDER IS THE GREATEST GRACE."—DRYDEN.

PARTICULAR KINDS OF GRAIN GROW WILD IN SOME COUNTRIES, BUT THEY HAVE NOT THE PERFECTION OF OUR CULTIVATED GRAIN.

POMPEY'S PILLAR, AT ALEXANDRIA, CONSISTS OF A SINGLE BLOCK OF RED GRANITE, UPWARDS OF SIXTY-SEVEN FEET HIGH.

oats, rice, Indian corn, and the sugar-cane; their chief characteristic being that their stems or culms are cylindrical and provided at intervals with knots, from each of which arises a long linear or lanceolate leaf, sheathing the stem for some distance.

GRAMIN'EOUS, in botany, an epithet for plants belonging to the family of *grasses*, having simple leaves, a jointed stem, a husky calyx, termed *glume*, and a single seed.

GRAM'MAR, the art which analyzes and classes the words in a language, which details its peculiarities, and furnishes rules, recognized by the best authorities, for its construction. General grammar teaches the principles which are common to all languages; and the grammar of any particular language teaches the principles peculiar to that language. Grammar treats of sentences, and of the several parts of which they are compounded. Sentences consist of words; words of one or more syllables; syllables of one or more letters; so that, in fact, letters, syllables, words, and sentences, make up the whole subject of grammar.—By means of inarticulate sounds beasts can express certain feelings; but man is distinguished from the brute creation by the power of modifying a much greater variety of sounds, and of fixing to each modification a particular meaning. The sounds thus modified are called words, and as words have no natural relation to the ideas and perceptions of which they are significant, the use of them must either have been the result of human sagacity, or have been suggested to the first man by the Author of nature.——*Grammar* is also used for a book containing the rules of this art, methodically digested; as, "Murray's English Grammar," "Moody's New Eton Latin Grammar," &c.

GRAMME, a French measure of weight, equal to 22·966 grains English.

GRAND JU'RY, a jury convened by the Sheriff to examine into the grounds of accusation against offenders, and validity of indictments. Offenders against whom true bills are found by the grand jury are afterwards tried before a petty jury.

GRANDEE', a designation given to a nobleman of Spain or Portugal.

GRAN'ITE, a primary rock, of uniform structure, composed of particles of quartz, mica, and felspar, crystalized, and cohering without cement. It is the foundation rock of the earth, on which others lie, but raised in mountains whose lofty peaks are formed of it. The aspect of granitic mountains is extremely diverse, depending, in part, upon the nature of its stratification, and the degree of disintegration it has undergone. In Europe, the central part of the principal mountain ranges is of this rock, as in Scandinavia, the Alps, the Pyrenees, and the Carpathian mountains. In Asia, granite forms a considerable part of the Uralian and Altaic ranges of mountains; and it appears also to compose the principal mountains that have been examined in Africa. The colour of granite is greatly diversified by the different colours and proportions of the component parts.

GRAN'ITEL, in mineralogy, a granitic compound containing two constituent parts, as quartz and felspar, or quartz and hornblende.

GRAN'ITIN, in mineralogy, a granitic aggregate of three species of minerals, some of which differ from the species which compose granite; as quartz, felspar, and jade or shorl.

GRANT, in law, a gift in writing of such things as cannot conveniently be passed or verbally conveyed.

GRANULA'TION, the act of forming into grains. The process by which a metal is reduced into grains is effected by melting the metal, and then pouring it in a very thin stream into cold water. As soon as the metal comes in contact with water it divides into drops, which have a tendency to a spherical shape, and are more or less perfect, according to the thinness of the stream, the height from which it falls, and the temperature of the metal. Some of the more fusible metals may be reduced to much finer grains, by pouring it, in its melting state, into a wooden box, rubbed over with chalk, and shaking it violently before it has time to become solid.——In medicine, the little, grain-like, fleshy bodies, which form on the surfaces of ulcers and suppurating wounds, and serve both for filling up the cavities and bringing nearer together and uniting their sides, are called *granulations*. The colour of healthy granulations is a deep florid red, and are always prone to unite. When livid, they are unhealthy, and have only a languid circulation.

GRAPE, the fruit of the vine, growing in clusters, from which wine is expressed. Grapes are found by a chemical analysis to contain supertartrate of potash, tartaric acid, citric and malic acids, abundance of sugar, a portion of mucilage, jelly, some albumen, and also, as is said, some gluten. France, Spain, Portugal, and Italy, as well as some parts of Germany, produce grapes which yield wines of various qualities and flavours, some of them highly esteemed. The climate of England is not so favourable to their proper ripening, but the grapes we raise in hot-houses are generally superior to those which we import green from Malaga and other ports of Spain. When dried and preserved, they are called *raisins*.——Whether or not the vine will ever be cultivated to any advantageous extent in England, we are incompetent to form a correct judgment; but we think it due to Mr. Clement Hoare,—whose skill and industry (as we can personally attest) have been for many years most successfully directed to this end,—to advise all who may be desirous of gleaning sound practical and scientific information on this particular branch of horticulture, to consult the treatise he has published on its growth and culture. He has there, most unquestionably, given examples of native produce, which hold out an encouraging prospect of our becoming independent of "the vine-covered hills," if

GRAPES SHOULD HANG ON THE VINE TILL THEY ARE PERFECTLY RIPE, FOR IF UNRIPE WHEN GATHERED THEY WILL NEVER RIPEN.

not of entering into competition with our continental neighbours.—We observe that Mr. H. has availed himself of the popular method of discussing the merits of his plans, by a course of lectures delivered at the Mechanics' Institution, Winchester; the neighbourhood of which city, he says, is highly favourable to the growth of the vine. Alluding more especially to the southern coast of this island, where alone the solar heat is sufficiently powerful to ripen the fruit, he emphatically observed, that "every cottager should possess a vine, which, if properly treated, would produce him sufficient fruit to pay his rent."

GRA'PE-SHOT, in artillery, a combination of small shot put into a thick canvass bag, and corded so as to form a kind of cylinder.

GRAPH'ITE, in mineralogy, carburet of iron; that substance used for pencils, which is very generally called *black-lead*.

GRAPHOM'ETER, a mathematical instrument, called also a *semi-circle*, whose use is to observe any angle whose vertex is at the centre of the instrument in any plane, and to find how many degrees it contains.

GRAP'NEL, a small anchor fitted with four or five flukes or claws, used to hold boats or small vessels.

GRASS'HOPPER, in entomology, a species of the genus *Gryllus*, to which belong the locust and cricket. The grasshopper of our fields is innocent and harmless.

GRAT'ITUDE, an agreeable emotion, in which good-will to a benefactor forms the ground-work. Gratitude for benefits received cannot be too highly cherished; for it implies a feeling and generous heart, and a proper sense of duty.

GRAV'EL, small stones or pebbles, intermixed with sand. It is supposed to originate from fragments of rocks and flints, worn by the action of the sea, and by their mutual attritions into rounded and other forms. Its red colour is occasioned by the oxyde of iron, and, when found, it affords evidence of a sea-beach having once been on the spot.——*Gravel*, in medicine, a painful disorder, arising from a gritty matter concreting into small stones in the kidneys and bladder.

GRA'VER, in the art of engraving, a tool by which all the lines, scratches, and shades are cut in copper, &c.

GRAVIM'ETER, an instrument for measuring the specific gravities of bodies.

GRAVITATION, in physiology, a species of attraction, or the tendency of one body towards another, in consequence of its gravity. Thus, a body elevated above the earth tends to fall, that is, it *gravitates* towards the centre of the earth; and the planets are supposed to gravitate towards the sun, or centre of the solar system. The following remarks on *gravitation*, from Moseley's Illustrations of Science, are so descriptive of its universality, that we cannot resist the temptation of copying them: "Gravitation is fixed in matter eternally and inseparably. No lapse of time wears it away, no modification of circumstances in which it can be placed—no appliance of artificial means—or power of other natural forces upon it, removes or can remove the slightest conceivable portion of it. You may crush the parts of a body into a powder, apply to it the power of heat, and melt it into a liquid—or you may, by a yet intenser application of heat, dilate it into a gas; you may make of it a chemical solution; bring it again to its original form of a solid—analyze it again and again—combine and recombine it; through all these changes you will not in the slightest conceivable degree have affected the gravity or weight of any one of its particles. Not only is the power of gravitating thus unalterably infixed in matter, but it is infixed in it universally. There is no place on the earth's surface where there is matter and not weight—there is no matter known to exist in our system of the universe which does not gravitate; and if we carry on our inquiries beyond the limits of our system, into the fathomless depths of space, we find there the stars gravitating towards one another." The *vis inertiæ*, says Sir Isaac Newton, is a passive principle by which most bodies persist in their motion or rest, receive motion in proportion to the force impressing it, and resist as much as they are resisted. By this principle alone there never could have been any motion in the world; some other principle was necessary for putting bodies into motion; for, from the various compositions of two motions, it is certain that there is not always the same quantity of motion in the world. But by reason of the tenacity of fluids, the attrition of their parts, and the weakness of elasticity in solids, motion is much more apt to be lost than got, and is always upon the decay. There is therefore a necessity of conserving and recruiting it, by active principles; and such is the cause of gravity, by which the planets and comets keep their motion in their orbs, and bodies acquire great motion in falling, &c.

GRAV'ITY, SPECIFIC, is the relative gravity of any body or substance, considered with regard to some other body, which is assumed as a standard of comparison; and this standard, by universal consent and practice, is rain-water, on account of its being less subject to variation in different circumstances of time, place, &c., than any other body, whether solid or fluid. It happens that a cubic foot of rain water weighs 1000 ounces avoirdupois. Consequently, assuming this as the specific gravity of rain-water, and comparing all other bodies with this, the same numbers that express the specific gravity of bodies, will at the same time denote the weight of a cubic foot of each in avoirdupois ounces, which is a great convenience in numerical computations. From the preceding definition we readily draw the following laws of the specific gravity of bodies, viz. 1. in bodies of equal magnitude, the specific gravities are directly as the weights, or as their densities; 2. in bodies of the same specific gravities, the weights will be as the magni-

CRICKETS AND GRASSHOPPERS EFFECT THEIR CHIRPING NOISE, BY GRATING THEIR SPINY THIGHS AGAINST THEIR HARD WINGS.

THE POWER OF GRAVITY AT TWO MILES FROM THE EARTH, IS FOUR TIMES LESS THAN AT ONE MILE; AND SO GOES ON LESSENING.

tudes; 3. in bodies of equal weights, the specific gravities are inversely as the magnitudes; 4. the weights of different bodies are to each other in the compound ratio of their magnitudes and specific gravities. Hence, it is obvious, that, of the magnitude, weight, and specific gravity of a body, any two being given, the third may be found; and we may thus find the magnitude of bodies, which are too irregular to admit of the application of the common rules of mensuration; or we may, by knowing the specific gravity and magnitude, find the weight of bodies which are too ponderous to be submitted to the action of the balance or steelyard; or lastly, the magnitude and weight being given, we may ascertain their specific gravities. The most accurate and concise mode of ascertaining the density of liquids, is to employ a small glass measure with a very short, narrow neck, and adjusted to hold exactly 1000 grains of distilled water. The vessel being filled with any other liquid, the weight of it is observed, and thence its relative density to water may be found by merely striking off three decimal places. At each operation the glass must be carefully rinsed with pure water, and again dried, by heating it, and then sucking out the humified air by the help of a sleuder inserted tube. If fluids of various densities, and not disposed to unite in any chemical affinity, be poured into a vessel, they will arrange themselves in horizontal strata, according to their respective densities, the heavier always occupying a lower place.

GRAVITY, Centre of, in mechanics, is a point within a body, through which, if a plane pass, the segments on each side will equiponderate; that is, neither of them can move the other. Hence, if the descent of the centre of gravity be prevented, or if the body be suspended by its centre of gravity, it will continue at rest in equilibrium in any position. The centre of gravity of a parallelogram or cylinder, or any prism whatever, is in the middle point of the axis, and the centre of gravity of a circle or any regular figure, is the same as the centre of magnitude. The common centre of gravity of two bodies is a point so situated in a right line joining the centres of the two bodies, that if the point be suspended, the two bodies will equiponderate and rest. Thus the point of suspension in a balance or steelyard, where the two weights equiponderate, is the common centre of gravity of the two weights.

GRAY'LING, in ichthyology, a voracious fish of the genus *Salmo*, larger than a trout, and of a silvery gray colour. It is found in clear rapid streams in the north of Europe, and is much esteemed as food.

GRAYWACKE, in geology, a remarkable kind of rock or stone, composed of grains or fragments of different minerals, chiefly of quartz, felspar, siliceous slate, and argillite. These several ingredients are united by an indurated argillaceous substance, or the interstices between the larger fragments are filled by the same materials which form the larger parts of the rock, but in grains so comminuted as to resemble a homogeneous cement. It is of various colours, generally inclining to some shade of gray or brown.

GREBE, in ornithology, a fowl of the genus *Colymbus* and *Anseres*, of several species.

GREEK CHURCH, that portion of Christians who conform, in their creed, usages, and church government, to the views of Christianity introduced into the former Greek empire, and perfected, since the fifth century, under the patriarchs of Constantinople, Alexandria, Antioch, and Jerusalem. Like the Roman Catholic, this church recognizes two sources of doctrine, the bible and tradition, under which last it comprehends not only those doctrines which were orally delivered by the apostles, but also those which have been approved of by the fathers of the Greek church. It is the only church which holds that the Holy Ghost proceeds from the Father only, thus differing from the Catholic and Protestant churches, which agree in deriving the Holy Ghost from the Father and the Son. Like the Catholic church, it has seven sacraments—baptism, chrism, the eucharist preceded by confession, penance, ordination, marriage, and supreme unction; but it is peculiar in holding that full purification from original sin in baptism requires an immersion three times of the whole body in water, whether infants or adults are to be baptized, and in joining chrism (confirmation) with it as the completion of baptism. It rejects the doctrine of purgatory, has nothing to do with predestination, works of supererogation, indulgences, and dispensations; and it recognizes neither the pope nor any one else as the visible vicar of Christ on earth. In the invocation of the saints, in their fasts, relics, &c. they are as zealous as the Romanists; it may be said, indeed, that the services of the Greek church consist almost entirely of outward forms. This is the religion of Russia; the ecclesiastical establishment of which consists in a holy synod, four metropolitans, eleven arch-bishops, nineteen bishops, 12,500 parish churches, and 425 convents, fifty-eight of which are connected with monastic schools for the education of the clergy. The Greek church, under the Turkish dominion, remained, as far as was possible under such circumstances, faithful to the original constitution. The patriarch of Constantinople exercises the highest ecclesiastical jurisdiction over the Greeks in the whole Turkish empire; but they labour under many disabilities, among which is a heavy poll-tax, under the name of "exemption from beheading."

GREEK FIRE, a combustible composition invented by the Greeks in the middle ages, during their wars with the Arabs and Turks. It consists of naptha, bitumen, sulphur, gum, &c.

GREEK LANGUAGE. The language of the primitive inhabitants of Greece, the Pelasgi, was already extinct in the time of

Herodotus, who asserts that it was different from the Hellenic, and adds, that it is probable the Hellenes have retained their original language. From the great number of Hellenic tribes of the same race, it was to be expected that there would be different dialects, the knowledge of which is the more necessary for becoming acquainted with the Greek language, since the writers of this nation have transmitted the peculiarities of the different dialects in the use of single letters, words, terminations, and expressions, and that not merely to characterise more particularly an individual represented as speaking, but even when they speak in their own person. It is customary to distinguish three leading dialects, according to the three leading branches of the Greeks, the Æolic, the Doric, and the Ionic, to which was afterwards added the mixed Attic dialect. At what time this language first began to be expressed in writing, has long been a subject of doubt. According to the general opinion, Cadmus, the Phœnician, introduced the alphabet into Greece. His alphabet consisted of but sixteen letters; four are said to have been invented by Palamedes in the Trojan war, and four more by Simonides of Ceos. As the Ionians first adopted these letters, and the Athenians received them from them, the alphabet with twenty-four letters is called the *Ionic*. Those who have most carefully studied the subject, believe that the use of the alphabet became common in Greece about 550 years before Christ, and about as long after Homer. In Homer's time, all knowledge, religion, and laws were preserved by memory alone, and for that reason were put in verse, till prose was introduced with the art of writing. The Greek language, as preserved in the writings of the celebrated authors of antiquity, as Homer, Hesiod, Demosthenes, Aristotle, Plato, Xenophon, &c. has a great variety of terms and expressions, suitable to the genius and occasions of a polite and learned people, who had a taste for arts and sciences. In it, proper names are significative; which is the reason that the modern languages borrow so many terms from it. When any new invention, instrument, machine, or the like, is discovered, recourse is generally had to the Greek for a name to it; the facility wherewith words are there compounded, affording such as will be expressive of its use: such are barometer, hygrometer, microscope, telescope, thermometer, &c. But of all sciences medicine most abounds with such terms; as, diaphoretic, diagnosis, diarrhœa, hemorrhage, hydrophobia, pthisis, atrophy, &c.——*Modern Greek*, or *Romaic*. The Greek language seems to have preserved its purity longer than any other known to us; and even long after its purity was lost, the echo of this beautiful tongue served to keep alive something of the spirit of ancient Greece. All the supports of this majestic and refined dialect seemed to fail, when the Greeks were enslaved by the fall of Constantinople (A.D. 1543.) All the cultivated classes who still retained the pure Greek, the language of the Byzantine princes, either perished in the conflict, or took to flight, or courted the favour of their rude conquerors by adopting their dialect. In the lower classes only did the common Greek survive the vulgar dialect of the polished classes. But the Greek spirit, not yet extinguished by all the adversities the nation had undergone, finally revived with increasing vigour, and even the love of song kept alive some sparks of patriotic sentiment. From the beginning of the present century, external circumstances have greatly favoured the progress of education in Greece; schools have been established; and the language itself, which in its degradation was not destitute of melody and flexibility, gained energy and vivacity from the efforts of several patriotic individuals, who endeavoured to bring it nearer the ancient classic dialect. Under the protection of England, during the administration of Mr. Canning, much was done towards the mental improvement of the modern Greeks, and the Greek spirit was gradually developed. An Ionic Greek university was opened at Corfu in 1824. It consists of four faculties, for theology, law, medicine, and philosophy. Its chancellor was lord Guildford. Publications of all kinds have appeared; and effectual means have been taken by scholars of first-rate abilities, to enrich and ennoble the modern Greek language from the classic treasures of their accomplished ancestors.

GREEN'-CLOTH, in British polity, a board or court of justice held in the counting-house of the British monarch's household, and composed of the lord-steward and inferior officers. To this court is committed the charge and supervision of the royal household in matters of justice and government, with power to correct all offenders, and to maintain the peace of the verge, or jurisdiction of the court-royal, which extends every way two hundred yards from the gate of the palace. Without a warrant first obtained from this court, no servant of the household can be arrested for debt.—It takes its name from a green-cloth spread over the board at which it is held.

GREEN'-FINCH, in ornithology, a species of *Fringilla*, the feathers of which are of a greenish hue, with the wings and tail variegated with yellow.

GREEN'-HOUSE, or Conservatory, a glazed building, erected for sheltering and preserving the tender exotic plants, which will not bear to be exposed to the open air during the winter season.

GREEN'STONE, in geology, a rock of the trap formation, consisting of hornblend and felspar in the state of grains or small crystals.

GREGA'RIOUS, in natural history, an epithet for such animals as herd together in flocks.

GREGO'RIAN. The *Gregorian year*, in chronology, is a correction of the Julian year. In the latter, every secular or hundredth year is bissextile: in the former every one in four. This reformation, which

THE ATMOSPHERE OF GREECE IS SO DRY, THAT AT EIGHTY-SIX DEGREES, NEARLY THE WHOLE OF THE INSECTS AND VEGETABLES DISAPPEAR.

AFTER THE OTTOMANS HAD BECOME MASTERS OF GREECE, ALL THE INSTITUTIONS WHICH HAD CONTRIBUTED TO PRESERVE THE LANGUAGE, PERISHED.

was made by pope Gregory XIII. A.D. 1582, is also called the *New-style*.

GRENA'DE, a hollow shell or globe of iron, filled with combustibles, and thrown out of a howitzer. There is also a smaller kind, thrown by hand, which are called *hand-grenades*. These were originally used by soldiers, who, from long service and distinguished bravery, were selected for the service; and hence the name of *grenadiers*, who now form the first company of a battalion.

GREN'ATITE, a mineral of a dark reddish brown colour, sometimes called prismatic garnet. It occurs imbedded in mica slate, and in talc, and is infusible by the blow-pipe.

GRIF'FIN, in the natural history of the ancients, and in heraldry, an imaginary animal, represented with four legs, wings, and a beak; the upper part representing an eagle, and the lower part a lion. By this form the ancients intended to give an idea of strength and swiftness united, with an extraordinary vigilance in guarding whatever was intrusted to its care. This hybrid animal was supposed to watch over mines of gold and hidden treasures, and was consecrated to the sun.

GRISET'TE *(French)*, originally meant a dress of coarse gray cloth, worn by the females of the lower classes; hence it is used for the females themselves. In the language of the theatres, *grisette* signifies an intriguing young girl, of the class of *soubrettes*.

GROAT, a silver coin, first struck in the reign of Edward I., before whose time the English had no silver coin larger than a penny. It has since been used as a money of account equal to fourpence.

GROSS, in commerce, the number of twelve dozen.——*Gross-weight*, the weight of merchandize or goods, with the dross, bag, cask, &c. in which they are contained, for which an allowance is to be made of tare and tret. This being deducted, the remainder of real weight is denominated *neat* or *net* weight.——*Advowson in gross*, in law, an advowson separated from the property of a manor, and annexed to the person of its owner.

GROSS'BEAK, in ornithology, a bird of the genus *Loxia*. It is of a fiery red colour, except round the bill and on the throat, which is black. It is to be met with in North America, and is called the Virginia nightingale, on account of the fineness of its song.

GROSS'ULAR, in mineralogy, a scarce kind of garnet, so named from its green colour.

GROTES'QUE, a word, as applied to painting, sculpture, &c., which denotes irregularity of form and proportions. In its more common acceptation, it means ludicrous, whimsical, extravagant.

GROUND, in painting, the surface on which figures or other objects are represented. In etching, a gumous composition spread over the surface of the metal to be etched, to prevent the nitric acid from eating, except in such places where this ground is opened with the point of a needle. ——In manufactures, the principal colour, to which others are considered as ornamental.——In music, the name given to a composition in which the base, consisting of a few bars of independent notes, is continually repeated to a continually varying melody.——*To gain ground*, to obtain an advantage; to prevail.——*Ground-angling*, fishing without a float, with a piece of lead fixed a few inches from the hook.——*Ground-ash*, a young shoot from the stump of an ash——*Ground-bait*, bait for fish which sinks to the bottom of the water. ——*Ground-floor*, the lower floor, or that which is on the basement.——*Ground-ivy*, in botany, a well-known plant, the *Glechoma hederacea*.——*Ground-plates*, in architecture, the outermost pieces of timber lying on or near the ground, framed into one another with mortises and tenons.——*Ground-plot*, the ground on which a building is placed.——*Ground-rent*, rent paid for the privilege of building on another man's ground, and generally held on a long lease. ——*Ground-tackle*, in ships, the ropes, &c. belonging to anchors.

GROUND'SEL, in botany, a plant of the genus *Senechio*, of several species.

GROUP, in painting and sculpture, an assemblage of figures or other objects.—— *Grouping* is the art of so combining and balancing the parts as to produce an harmonious effect.

GROUSE, in ornithology, a fowl of the genus *Tetrao*, of which there are several kinds, as, the black game, red game, ptarmigan, white grouse, ruffed grouse, &c. The distinguishing mark of this genus is a naked band, often of a red colour, in place of an eyebrow. They are wild, shy, and almost untameable; dwelling in forests and barren countries, far from man and cultivation.

GROVE, a small wood or cluster of trees with a shaded avenue, or a wood impervious to the rays of the sun.

GRUB, the worm or maggot produced from the beetle, which afterwards becomes a winged insect.

GRUINA'LES, in botany, one of Linnæus's natural orders of plants, containing the geraniums, flax, lignum vitæ, &c.

GRYL'LUS, in entomology, the name of the cricket and locust kind, which, together with the grasshoppers, make only one genus of insects, the characteristics of which are these: the antennæ setaceous; the exterior wings membranaceous and narrow; the thorax compressed and angulated; and the legs formed for leaping.

GRYPH'ITE, or CROWSTONE, an oblong fossil shell, narrow at the head, which is very hooked, and wider towards the extremity, where it ends in a circular limb.

GUAIAC', or GUAIA'CUM, a resinous substance procured from a tree (the *Guaicum officinale*) growing in the West Indies. It is much used in medicine as a stimulant.

GUA'NA, in zoology, a species of lizard, found in South America.

GUAN'ACO, in zoology, the lama, or camel of South America, in a wild state.

GUAN'O, a substance of a dark yellow colour, and of a strong ambrosial smell. It is found in large quantities on the coasts of Peru and other parts of South America, and appears to be the accumulation of the excrements of innumerable flocks of birds. It is such an excellent manure, that it forms an extensive and profitable branch of trade.

GUA'RA, in ornithology, the *Tantalus ruber*, a Brazilian bird, which when first hatched is black, afterwards changes to gray, and then to a bright red colour.

GUAR'ANTOR, one who engages to see that the stipulations of another are performed; also, one who engages to secure another in any right or possession.

GUAR'ANTY, or GUARANTEE', an undertaking or engagement by a third party, that the stipulations of a treaty, or the engagement or promise of another shall be performed.

GUARD, the duty of guarding or defending any post or person from an attack or surprise. Also, the soldiers who do this duty.——*Guard*, in fencing, a posture or action proper to defend the body.——*Vanguard*, in military affairs, a body of troops, either horse or foot, that march before an army or division, to prevent surprise or give notice of danger.——*Rear-guard*, a body of troops that march in the rear, for a like purpose.——*Life-guards*, a body of select troops, whose especial duty is to defend the person of a prince or chief officer.

GUARD'ANT, in heraldry, having the face turned towards the spectator.

GUARD'IAN, in law, a person appointed by will, or otherwise, to superintend the education and property of a minor, to whom the guardian is bound to account, after the child is of age, under responsibility to the Lord Chancellor for the just performance of the trust.

GUARDS, in a particular sense, the troops that are designed to guard the royal person and palace; and which consist both of horse and foot. In Britain, the household troops or guards consist of the life-guards, the royal regiment of horse-guards, and three regiments of foot-guards.——*Yeomen of the Guards*, a band of body-guards instituted by Henry VIII. in the year 1545. Their dress is similar to that of the time of their founder. One hundred are by rotation on duty, and there are seventy more, out of whom the place of any of the hundred who die is supplied.——*National guards*, a military body which has acquired historical importance in the politics of France, originated with the revolution, but underwent many changes both during Napoleon's sway and under the restored Bourbons. It was abolished in April, 1827, for having demanded the removal of Villele's ministry; but was revived at Paris during the popular commotion in July, 1830, which ended in seating Louis Philippe on the throne.——*Guard-ship*, a vessel of war appointed to superintend the marine affairs of a harbour or river, to see that the ships not in commission have their proper watch-word kept duly, by sending her guard-boats round them every night; and to receive seamen who are impressed in time of war.

GUA'VA, in botany, an American tree, and its fruit, of the genus *Psidium*. There are two varieties, the *pyriferum* or white guava, and the *pomiferum* or red guava. The fruit or berry is large and oval-shaped, like the pomegranate, and is of an agreeable flavour.

GUDG'EON, in ichthyology, a small fresh-water fish, of the genus *Cyprinus*.

GUE'BRES, a Persian sect, who still worship fire as an emanation or emblem of the Deity.

GUELFS, or GUELPHS, the name of a family, composing a faction formerly in Italy, whose contests with a rival faction, called the Ghibelines, was the cause of much misery and bloodshed.——The wars of the Guelfs and Ghibelines became the struggle between the spiritual and secular power. The popes, who endeavoured to reduce the German emperors to acknowledge their supremacy, and the cities of Italy, struggling for independence, and deliverance from the oppressive yoke of these same emperors, formed the party of the Guelfs. Those who favoured the emperors were called Ghibelines.——A branch of the Guelf family was in the 11th century transplanted from Italy to Germany, where it became the ruling race of several countries; and the memory of this ancient name has lately been revived by the institution of the Hanoverian Guelfic order.

GUILD, a company, fraternity, or corporation, associated for some commercial purpose: of which every member was to pay something toward the common charge. The ancient guilds were licensed by the king, and governed by laws and orders of their own.

GUILD'HALL, the chief hall of the city of London, for holding courts, and for the meeting of the lord-mayor and commonalty, in order to make laws and ordinances for the welfare and regulation of the city.——*Guild-rents*, are rents paid to the crown by any guild or fraternity: or those that formerly belonged to religious houses, and came to the crown at the general dissolution of monasteries.

GUIL'LOTINE, an instrument of public execution, for beheading persons at one stroke; adopted in France during the period of the Revolution, as affording the least barbarous means of putting criminals to death. The invention of this decapitating machine has been erroneously ascribed to Guillotin, a French physician. It was merely proposed by him, and adopted by the convention, as being less ignominious for the family of the person executed: and the first criminal suffered by it, at the *Place de Grève*, April 25th, 1792. A similar instrument, called *mannara*, was used in Italy for beheading criminals of noble birth: the *maiden*, formerly used in

A GRAND CIVIC BANQUET WAS GIVEN AT GUILDHALL, JUNE 18, 1814, TO THE ALLIED SOVEREIGNS OF RUSSIA, PRUSSIA, AND MANY FOREIGN NOBLES.

ON JULY 9, 1814, A GRAND DINNER WAS GIVEN AT GUILDHALL, BY THE CORPORATION OF LONDON, TO HIS GRACE THE DUKE OF WELLINGTON.

Scotland, was also constructed on the same principle.

GUIN'EA, an English gold coin, first coined in the reign of Charles II., and till lately current for 21*s*. It was so called because it was made from the gold that was brought from Guinea, on the coast of Africa.

GUIN'EA-HEN, in ornithology, the *Numida meleagris*, an African fowl domesticated in Europe, which makes a harsh unpleasant cry. Its colour is a dark gray, beautifully variegated with small white spots.

GUIN'EA-PIG, in zoology, a quadruped of the genus *Cavia*, a native of South America, but now domesticated in Europe. It is seven or eight inches long, and of a white colour, variegated with black and light brown spots.

GUITAR', a musical stringed instrument, rather larger than a violin, and played with the fingers. It is much used in Spain and Italy, more especially in the former country, where there are few, even of the labouring class, who do not solace themselves with its practice.

GU'LAUND, in ornithology, an aquatic fowl inhabiting Iceland. In size it is between a goose and a duck, the breast and belly white, and the head of a beautiful green.

GULES, in heraldry, the red colour.

GULF, in geography, a broad capacious bay, which, when very extensive, takes the name of a sea: as the gulf of Venice, also called the Adriatic sea. A *gulf* and a *bay* differ only in extent: we apply *bay* to a large or small recess of the sea, but *gulf* is applied only to a large extent of water.—— It also means, a deep cavity in the earth, and a whirlpool.

GULL, a marine fowl of the genus *Larus*, and order of *Anseres*. There are several species.

GUM, a concrete vegetable juice, of no particular smell or taste, becoming viscous or tenacious when dissolved or moistened with water; totally dissoluble into a liquid by water; not dissolving in vinous spirits or oils; burning to a black coal, without melting or catching flame; and suffering no dissipation in the heat of boiling water. The pure gums are such as gum-arabic, tragacanth, senegal, and the gum of cherry and plum-trees.

GUM-AR'ABIC, a gum which flows from the acacia, in Arabia, Egypt, &c. It is very useful both in medicine and the arts.

GUM'-LAC, the produce of an insect which deposits its eggs on the branches of a tree called *bihar*, in Assam, a country bordering on Thibet, and elsewhere in Asia.

GUM'-RESIN, a mixed juice of plants, consisting of resin and an extractive matter, which has been taken for a gummy substance. The most important species are olibanum, galbanum, scammony, gamboge, euphorbium, asafœtida, aloes, myrrh, and gum-ammoniac. Almost all the gum-resins are medicinal substances, and little employed in the arts and manufactures.

GUM-SEN'EGAL, a gum resembling gum-arabic, brought from the country of the river Senegal, in Africa.

GUM-TRAG'ACANTH, the gum of a thorny shrub of that name in Crete, Asia, and Greece. It is employed in calico-printing, and by shoemakers.

GUN, a fire-arm, or weapon of offence, which forcibly discharges a ball, shot, or other offensive matter, through a cylindrical barrel, by means of gunpowder. The larger species of guns are called cannon; and the smaller kinds are called muskets, carbines, fowling-pieces, &c. The gun is supposed to have been used in Asia at a very early date; but it was not invented in Europe before the 14th century. Roger Bacon, about the year 1280, suggested the possibility of applying the preparation since called gunpowder to the purposes of war; but the idea of blowing a body to a distance by its power was produced by its accidentally doing so, in the laboratory of Bartholomew Schwartz, a German monk. Guns were originally made of iron bars, soldered together, and strengthened with iron hoops; an example of which is still preserved in the Tower of London.

GUN'NERY, the science of using artillery against an enemy judiciously, and to the greatest effect. Besides an accurate acquaintance with the management of ordnance of all kinds, the range and force of every kind, the charge and direction necessary for different distances, their materials, the fabrication and effect of gunpowder, &c.; the artillerist must be able to instruct his men in their several exercises, and be thoroughly acquainted with all the tactics necessary in the art of attack and defence: he must be practically skilled in throwing up batteries and other field-works; he must understand mathematics (particularly the doctrine of curves, to calculate the path of the balls); and have some knowledge of mechanics.

GUN'POWDER, a composition of nitre, sulphur, and charcoal, mixed and reduced to fine powder, and usually granulated. It is in the highest degree combustible, and, by means of its elastic force, explodes with great intensity.

GUN'ROOM, in ships, an apartment under the great cabin, where the gunner and his men prepare their cartridges, &c.

GUNTER'S CHAIN, in mensuration, the chain commonly used in measuring or surveying land, so called from Mr. Gunter, the inventor. The chain is 66 feet in length, and is divided into 100 links of 7.92 inches each, consequently an acre of land is equal to 10 square chains.——*Gunter's Line*, a logarithmic line, usually graduated upon scales, sectors, &c.——*Gunter's Quadrant*, the simplest form of a quadrant, provided with two sight-holes, and a string and bob of lead; by which vertical angles may, for ordinary purposes, be determined. The face of the quadrant is also provided with scales and tables, useful in dialling, surveying, &c.

GUN'WALE, or GUN'NEL, the upper-

THE ANCIENT GYMNASIUM WAS LITTLE MORE THAN A SCHOOL FOR WARRIORS, MILITARY EXERCISES BEING THOSE WHICH WERE MOST ENCOURAGED.

THE ELECTRIC POWER OF THE GYMNOTUS IS SO GREAT, THAT THE SHOCK SOMETIMES EQUALS THAT WHICH IS PRODUCED BY A VOLTAIC FILE.

most wale of a ship, or that piece of timber which reaches on either side from the quarter deck to the forecastle, being the uppermost bend which finishes the upper works of the hull.

GUR'HOFITE, in mineralogy, a subvariety of magnesian carbonate of lime, found near Gurhoff, in Lower Austria. It is snow-white, and has a dull, slightly conchoidal, or even fracture.

GUR'NARD, in ichthyology, a fish of several species, of the genus *Trigla*. The head is loricated with rough lines, or bony plates, and there are seven rays in the membranes of the gills.

GUS'TO, that which excites pleasant sensations in the palate or tongue. Figuratively this word is used for intellectual taste.

GUT, the intestinal canal of an animal. It extends, with many circumvolutions, from the pylorus to the vent; is composed of three coats, and is attached to the body by a membrane called the mesentery. The thin and small parts are called, by anatomists, the *duodenum*, the *ilium*, and the *jejunum;* the large and thick parts are called the *cæcum*, the *colon*, and the *rectum*. By means of this canal, the undigested and unabsorbed parts of food are conveyed from the stomach and discharged.

GUTTA SERE'NA, a disease in the retina of the eye, which deprives the patient of his sight. Its cause is ascribed to an obstruction of the optic nerve, which may proceed from a palsy in the nerve, from a suppression of usual hæmorrhages, from ulcers healed too soon, or from an epilepsy. Mr. Lawrence, in his Lectures on Surgery, observes, "The term *gutta serena* is, perhaps, nearly synonymous with *amaurosis;* however there is this distinction between them, that *amaurosis* is a general term applied to all affections, whatever may be their degree, of the nervous structure of the eye, while *gutta serena* is rather applied to the complete state of blindness, which arises from the affection of the nerve, when it is fully established."

GUY, in marine language, is a large slack rope, extending from the head of the main-mast to that of the fore-mast, to sustain a tackle for loading or unloading. Also, a rope used to keep a heavy body steady while hoisting or lowering.

GYMNA'SIARCH, in antiquity, the director of the gymnasium. He had two deputies under him; the one called *xystarch*, who presided over the athletæ, and superintended the wrestling, the other, *gymnastes*, who had the direction of all the other exercises.

GYMNA'SIUM, in Grecian antiquity, the name given by the Spartans to the public building where the young men, naked, exercised themselves in leaping, running, throwing the discus and spear, wrestling, &c. They were afterwards very common in all parts of Greece, and imitated, very much augmented and improved, at Rome. They were not single edifices, but a knot of buildings united, being so capacious as to hold many thousands of people at once, and having room enough for philosophers, rhetoricians, and the professors of all other sciences, to read their lectures; and wrestlers, dancers, &c. to exercise at the same time without the least disturbance or interruption. The most renowned gymnasia at Athens were the Lyceum, Academia, and Cynosarges.

GYMNAS'TICS, the art of performing the several bodily exercises, as wrestling, running, fencing, dancing, &c. Modern gymnastics are intended chiefly for the preservation and promotion of health.

GYMNOSO'PHISTS, a sect of Indian philosophers, who went barefooted and scarcely clad, living in the woods and on mountains, and subsisting on the productions of the earth. They never drank wine, and maintained a life of celibacy. They believed in the immortality and transmigration of the soul; and placed the chief happiness of man in a contempt of the goods of fortune, and of the pleasures of sense.

GYMNOSPERM'OUS, in botany, having naked seeds, or seeds not inclosed in a capsule or other vessel.

GYMNO'TUS, the name of an eel, remarkable for its power of affecting the nervous system, in the manner of electricity. This animal and the torpedo, on dissection, appear to have an arrangement of muscular plates not unlike a galvanic trough, and well adapted to produce the effect.

GYNÆ'CEUM, among the ancients, the apartment of the women, a separate room in the inner part of the house, where they employed themselves in spinning, weaving, and needle-work.

GYN'ARCHY, or GYNÆCOC'RACY, government by a woman: or a state where women are legally capable of the supreme command. Of this Great Britain and Spain are familiar examples.

GYNÆCON'OMI, certain magistrates amongst the Athenians, who had an eye upon the conduct of the women, and punished such as forsook the line of propriety and modesty. A list of such as had been fined was put up by them upon a palm-tree in the *Ceramicus*. The *gynæconomi* were ten in number, and differed from the *gynæcocosmi;* for the former were inspectors of manners, the latter of dress.

GYNAN'DRIA, the 20th class of the Linnæan system of plants, containing nine orders; Diandria, Triandria, Tetrandria, Pentandria, Hexandria, Octandria, Decandria, Dodecandria, and Polyandria, with the stamens growing on the pistils.

GYPSOPH'ILA, in botany, a genus of plants, class 10 *Decandria*, order 2 *Digynia*.

GYP'SUM, or PLASTER OF PARIS, sulphate of lime: a mineral not unfrequently found in crystals, often in amorphous masses. There are several varieties; as, the foliated, compact, earthy, granular, snowy, and branchy. The prevailing colour is white, with various shades of gray, blue, red and yellow. When properly calcined

and pulverized, gypsum is mixed with water to the consistence of cream, and poured into moulds by the manufacturers of stucco ornaments and statues, when they are dried in proper stoves. During the consolidation of the plaster, it expands into the finest lines of the mould, so as to give a sharp and faithful impression. The virtues of gypsum in fertilizing land have been highly extolled; but, from repeated experiments, and comparative failures, it does not appear to deserve the encomiums it has received.

GYR'FALCON, in ornithology, a species of *Falco* or hawk.

GYRI'NUS, the water-flea, a genus of insects of the order *coleoptera*. They are found on the surface of waters, on which they run with incredible velocity; and when attempted to be taken, they plunge to the bottom, drawing after them a bubble very similar to a globule of quicksilver. The *Gyrinus natator* is the only European species: this has a surface so bright as to shine like a mirror in the sun. The larva is of a very singular shape, having a lengthened body furnished with many lateral appendages down the body; and is a highly curious object for the microscope. When its change arrives it forms for itself a small oval cell or case on a leaf of some water plant, and after casting its skin it becomes a chrysalis: these insects, like other beetles, fly only by night.

GYR'OMANCY, a kind of divination performed by walking round in a circle or ring.

GYVES, the name given to fetters or shackles for the legs.

H.

H, the eighth letter and sixth consonant of the English alphabet. It is not strictly a vowel, nor an articulation; but the mark of a stronger breathing than that which precedes the utterance of any other letter. It is pronounced with a strong expiration of the breath between the lips, closing, as it were, by a gentle motion of the lower jaw to the upper, and the tongue nearly approaching the palate. H is sometimes mute, as in *honour, honest;* also when united with *g*, as in *right, fight, brought.* In *which, what,* and some other words where it follows *w*, it is sounded before it, *hwich, hwat,* &c. H, among the Greeks, as a numeral, signified 8; in the Latin of the middle ages, 200, and with a dash over it, 200,000.——In music, *h* is the seventh degree in the diatonic scale, and the twelfth in the chromatic.

HA'BEAS-COR'PUS, in law, a writ for delivering a person from false imprisonment, or for removing a person from one court to another. It is accordingly considered as the glory of British jurisprudence, and the bulwark of personal freedom. By the action of this writ, of which there are several kinds, adapted to different occasions, relief from all unjust imprisonment may be obtained, causes removed from one court to another for the promotion of justice, and prosecutors compelled to bring the prosecuted to open trial, instead of prolonging his imprisonment. Thus it not only protects the citizen from unlawful imprisonment at the suggestion of the civil officers of the government, but also against groundless arrests at the suit or instigation of individuals. The right is, however, liable to be suspended; it being sometimes necessary to clothe the executive with an extraordinary power, as the Romans were in the habit of choosing a dictator in emergencies, when the public was in danger. In peaceable times a considerable degree of liberty may be left in the hands of the people, but in troublesome ones the executive power should have every possible strength; and, in conformity with these experimental truths, the British parliament may, in the hour of danger, by temporary suspension of every opposing statute, confide even absolute control in the hands of the administration, without permanently giving up one iota of freedom.

HAB'ERGEON, a coat of mail formerly worn to defend the neck and breast. It was formed of little iron rings united, and descended from the neck to the middle of the body.

HABEN'DUM, in law, a word of form in a deed or conveyance, which must consist of two parts, viz. the *premises* and the *habendum* (to have and to hold).

HAB'IT, in philosophy, an aptitude or disposition either of mind or body, acquired by a frequent repetition of the same act: thus virtue is called a habit of the mind; strength, a habit of the body. All natural habits, whether of body or mind, are no other than the body and mind themselves considered as either acting or suffering; or they are modes of the body or mind wherein either perseveres till effaced by some contrary mode.——*Habit*, in medicine, denotes the settled constitution of the body; or a particular state formed by nature, or induced by extraneous circumstances.

HADE, in mining, a term used to denote the inclination, or deviation from the vertical, of any mineral vein. Also the steep descent of a shaft.

HAD'DOCK, a fish of the cod kind, which inhabits the northern coast. It has a long body, the upper part of a dusky brown colour, and the belly of a silvery hue.

HAD'LEY'S QUAD'RANT, a quadrant

"H" SUBJOINED TO "C" SOMETIMES GIVES IT THE SOUND OF "SH," AS IN CHARLOTTE; BUT OFTENER THAT OF "TSH," AS IN CHURCH.

THE WORD "HABIT" IS PARTICULARLY USED FOR THE UNIFORM GARMENTS OF RELIGIOUS SOCIETIES, CONFORMABLE TO THEIR ORDER.

that is particularly used for taking altitudes at sea.

HÆMATITES, or BLOOD-STONE, in natural history, an extremely rich and fine iron ore. It is very ponderous, and is either of a pale red, a deeper red, or a bluish colour; usually of a very glossy surface; and when broken, of a fine and regularly striated texture: the striæ converging towards the centre of the body, and the masses naturally breaking into fragments of a broad base and pointed end, appearing something pyramidal.

HÆMAT'OCELE, in medicine, a hernia from extravasation of blood.

HÆM'ORRHAGE, a flux of blood from any part of the body, proceeding from the rupture of a blood-vessel, or some other cause. The principal causes of hæmorrhages are plethora, violent commotions of the body, hot foods and liquors, heat of the season, and a sudden cooling of the body after violent heat and passion.

HÆM'ORRHOIDS, in medicine, a discharge of blood from the hæmorrhoidal veins; the piles.

HAGIOG'RAPHY, sacred writings. The Jews divide the books of the Scriptures into three parts; the Law, which is contained in the first five books of the Old Testament; the Prophets, or Nevim; and the Cetuvim, or *writings*, by way of eminence. The latter class is called by the Greeks *Hagiographa*, comprehending the books of Psalms, Proverbs, Job, Daniel, Ezra, Nehemia, Ruth, Esther, Chronicles, Canticles, Lamentations, and Ecclesiastes.

HAIL, in meteorology, globules of ice, or vapour more intensely frozen than when it appears in the form of snow, and falling from the clouds in showers and storms. It is supposed to be formed in the higher regions of the atmosphere, where the cold is extreme, and where the electric matter is very copious. In these circumstances, a great number of particles of water are brought near together, where they are frozen, and in their descent collect other particles, so that the density of the substance of the hail-stone grows less and less from the centre; this being formed first in the higher regions, and the surface being collected in the lower. Hailstones assume various figures; some are round, others angular, others pyramidical, others flat, and sometimes they are stellated with six radii, like crystals of snow. They sometimes fall with a velocity of seventy feet in a second, or about fifty miles an hour: their great momentum, arising from this velocity, renders them very destructive, particularly in hot climates. Showers of ice and freezing rain are related to have fallen in different countries. In August, 1828, there was a fall of solid ice at Horsley in Staffordshire: some of the pieces were three inches long by one inch broad, and others were about three inches in circumference, and quite solid. A recent traveller in North America relates, that twelve years since, it rained and froze as it fell for two days; the trees, ships, and buildings were encrusted with icicles; the strongest branches of the trees fell almost every minute beneath the icy loads. Mr. Faux says, in March, 1820, at Newcastle, Delaware State, "I saw the effect of the late freezing rain on the trees, which, over an extent of country six times as large as England, has despoiled trees as completely as if chain shot had passed through them all. The trees and shrubs are laden with ice—a weight ten times that of their own boughs. Many farmers lost nearly all their timber and orchards; a ship was also upset by the great weight of the ice cohering to the rigging." The phenomena attending the formation and fall of hail are not well understood; but it is certain they are connected with electricity.

HAIR, in physiology, slender, oblong, and flexible filaments, growing out of the pores of animals, and serving most of them as a covering. It consists of the bulb, situated under the skin, which is a nervous vesicle, and a trunk which perforates the skin and cuticle, and is covered with a peculiar vagina or sheath. The colour of human hair depends on the medullary juice; but there are also general differences of it, peculiar in some degree to the climates. In the hottest countries it is very black; in the colder, it is yellowish, brown, or inclining to red; but in all places it grows grey or white with age. In quadrupeds, it is of the most various conformation, from the finest wool to the bristles of a hog. The principal constituent parts of hair are animal matter, oil, silex, sulphur, carbonate of lime, &c.—The Roman youth before the age of puberty wore their hair in ringlets upon their shoulders; but about the time of putting on the *toga virilis*, they cut it short; such of them, at least, as wished to distinguish themselves from the maccaronics and effeminate coxcombs. The hair thus cut off was consecrated to Apollo, who is always represented with flowing hair, or to some other god, under whose protection they supposed themselves to be more immediately placed.——*Hair*, in botany, the down, or hair-like threads on the surface of plants.

HAIR PENCILS, in painting, are composed of very fine hairs, as of the minever, the marten, the badger, the polecat, &c., which are mounted in a quill when they are small or of moderate size, but when larger than a quill they are mounted in white-iron tubes. The most essential quality of a good pencil is to form a fine point, so that all the hairs may be united when they are moistened by drawing them through the lips.

HAIR'SBREADTH, a measure of length, equal to the forty-eighth part of an inch.

HAL'BERD, or HAL'BERT, a weapon something like a spear, formerly carried by the serjeants of foot and artillery.

HAL'CYON, in ornithology, a name given by the ancients to the *alcedo*, or kingfisher; a bird that was said to lay her eggs in nests, on rocks near the sea, during the calm weather, about the winter solstice. ——*Halcyon-days*, in antiquity, seven days before, and as many after the winter solstice.

HALF'-BLOOD, in law, relationship by the father's or the mother's side only.

HALF-MOON, in fortification, an outwork composed of two faces, forming a salient angle, whose gorge is in the form of a crescent or half-moon.

HAL'IBUT, in ichthyology, a fish of the genus *Pleuronectes*. It has a compressed body, one side resembling the back, the other the belly; swims on its side; and both eyes are on the same side of the head. It grows to a great size, sometimes weighing from three to four hundred pounds, and forms an article of food.

HALIOTIS, the EAR-SHELL, in conchology, a simple shell without any hinge, and formed all of one piece, of a depressed figure, very angular at the mouth, having an approach to the spiral form at the summit, and having several perforations on the lateral part of the disk.

HALLELU'IAH, a word signifying *praise the Lord*, or *praise ye Jehovah*. It is met with in the beginning of some Psalms, and the end of others. It is a word of such liquid fluency and harmonious softness, that it is retained in our hymns without translation. In conformity with the German and other continental languages, in which *j* has the sound of *y*, we often see it written *Hallelujah;* but to pronounce the word with the English sound of *j* destroys its beauty, and it ought never to be so written.

HAL'LIARD, a rope or tackle for hoisting or lowering a sail.

HALLUCINA'TION, in medicine, *(dysæsthesia)*, erroneous imagination. *Hallucinations of the senses* arise from some defect in the organs of sense, or from some unusual circumstances attending the object; and they are sometimes symptoms of general disease, as in fevers. *Maniacal hallucinations* arise from some imaginary or mistaken idea.

HA'LO, in physiology, a luminous ring or circle, sometimes white and sometimes coloured, appearing round the body of the sun, moon, or stars; whose light, passing through an intervening cloud, gives rise to the phenomenon. It is generally believed that both solar and lunar haloes are heralds of succeeding changes of weather from dry to moist; as rain generally follows in periods of from four to twenty-four hours after each manifestation, according to the brilliancy of its appearance, and the perfection of the halo, particularly if the wind be S. or S. W. And that these indications generally precede the indications of the barometer, may be accounted for thus:—As the lower stratum of the atmosphere becomes condensed (from contrary currents or other causes), it is better qualified to concentrate by reflection the rays of the sun or moon: and hence a halo is formed before the atmospheric pressure is sufficient to act upon the barometer. Lunar haloes are more easily discovered than solar haloes, because the lunar rays are more feeble than the solar; but solar haloes may be readily discovered, if observers would accustom themselves to look steadily within a few degrees of the sun, when he has risen from 10° to 30°; and also when he has about the same altitude in the evening (as solar haloes are of very rare occurrence at mid-day), when they perceive he shines faintly, and there is no appearance of cloud.

HAL'OGENE, in chemistry, those substances which form compounds of a saline nature, by their union with metals, as *chlorine, iodine*, &c.

HAM'ADRYAD, in the heathen mythology, a wood-nymph, feigned to live and die with the tree to which it was attached.

HAM'MOCK, in naval affairs, a piece of hempen cloth, six feet long, and three feet wide, gathered together at the two ends by means of a clew, and slung horizontally under the deck, forming a receptacle for a bed. In preparing for battle, the hammocks, with their contents, are all firmly corded, taken upon deck, and fixed in various nettings so as to form a barricade against small shot.

HAM'SOKEN, in old law-books, signifies the liberty or privilege a man enjoys in his own house. It is also said to signify a franchise granted to lords of manors, by which they hold pleas, and take cognisance of the breach of that immunity.

HAM'STER, in zoology, a species of rat, the *Mus cricetus*, or German marmot. It is of the size of a water-rat, and is remarkable for two bags on each side of the jaw, under the skin, in which it conveys food to its winter residence.

HAN'APER, an office in chancery, under the direction of a master, whose clerk receives all fines due to the crown for seals of charters, patents, commissions, and writs. It is supposed he formerly deposited the money so taken in a kind of basket, or *hamper*. There is also an officer who is controller of the *hanaper*. This word therefore answered to the modern exchequer.

HAND, in anatomy, an important member of the human body, which, from the facilities it affords in all operations, and accuracy in ascertaining the magnitude, &c. of extraneous objects, is justly considered as contributing very essentially to all that is either ingenious or scientific in the human character. It consists of the *carpus*, or wrist; the *metacarpus*, or the four bones within the palm, and the fingers.——*Hand*, in the manege, a measure of four inches, by which the height of a horse is computed; Also the parts of a horse; as the *forehand*, for the head, neck, and fore-quarters; the *hind-hand*, which includes the rest. It also denotes the horseman's hand; as, the *spur-hand*, which is his right hand; and the *bridle-hand*, which is his left hand.——*Hand*, in heraldry, is termed either *dexter* (right), or *sinister* (left); and, when borne in the escutcheon, is supposed to signify power, equity, fidelity, and friendship.——The word *hand* is also used in a great variety of senses, far too numerous for insertion here, both literally and figuratively.

HAND'SPIKE, a strong wooden bar,

used as a lever to move the windlass and capstan in heaving up the anchor, or raising any weight on board a ship.

HANSEATIC, pertaining to the Hanse towns, or to their confederacy. The Hanse towns in Germany were certain commercial cities which associated for the protection of commerce as early as the 12th century. To this confederacy acceded certain commercial cities in Holland, England, France, Spain, and Italy, until they amounted to seventy-two, which for centuries commanded the respect and defied the power of kings. From the middle of the 15th century, the power of the confederacy, though still very formidable, began to decline. This, however, was not owing to any misconduct on the part of its leaders, but to the progress of that improvement it had done so much to promote. The civilization, which had been at first confined to the cities, gradually extended over the contiguous country; and feudal anarchy was everywhere superseded by a system of subordination and the progress of the arts. At present it only consists of the cities of Hamburgh, Lubeck, and Bremen; and they, indeed, possess merely the shadow of their former state.

HAP'PINESS, the agreeable sensations which spring from the enjoyment of good. It consists in the possession not only of the goods of the body, as health, strength, &c. but also of the more refined goods of the mind, as knowledge, memory, taste, and especially the moral virtues, magnanimity, fortitude, benevolence, &c. That state is mostly to be sought after, in which the fewest competitions and disappointments can happen, which least of all impairs any sense of pleasure, and opens an unexpected source of the most refined and lasting enjoyments. That state which is attended with all those advantages, is a state or course of virtue: therefore, a state of virtue, in which the moral goods of the mind are attained, is the happiest state; and he only can be esteemed really and permanently happy, who enjoys peace of mind in the favour of the Almighty.

HARAN'GUE, a popular oration, generally implying loudness or declamation; and not a deliberate and argumentative address or discourse.

HAR'BOUR, a port, haven, or inlet of the sea, in which ships can moor, and be sheltered from the fury of winds and a heavy sea.

HARD-A-LEE, in seaman's language, an order to put the helm close to the lee side of the ship, to tack or keep her head to the wind.——*Hard-a-weather*, an order to put the helm close to the weather or windward side of the ship.——*Hard-a-port*, an order to put the helm close to the larboard side.——*Hard-a-starboard*, an order to put the helm close to the starboard side.

HARD'NESS, in physiology, that quality in bodies whereby their parts cohere firmly together, so as not to give way to any external impulse, nor yield inwards, without breaking. A body, says M. Hauy, is considered more hard in proportion as it presents greater resistance to the friction of another hard body, such as a steel file; or as it is more capable of wearing or working into such other body, to which it may be applied by friction.

HARD'WARE, instruments and utensils of every kind manufactured from metals, comprising iron, brass, steel, and copper articles of all descriptions. Birmingham and Sheffield are the principal seats of the British hardware manufactures; and from these immense quantities of knives, razors, scissars, fire-arms, gilt and plated goods, &c. are supplied to an extent almost incredible. The estimate formed by Mr. M'Culloch is that the total aggregate value of the iron and other hardware manufactures of England and Scotland cannot be reckoned at less than 17,500,000*l.* a year; affording direct employment, in the various departments of the trade, for at least 360,000 persons.

HARE, in zoology, *Lepus timidus*, a timorous animal of exquisite sight and hearing, with long ears, large eyes, a short tail, and a divided upper lip. It is a beast of chace, and is sometimes pursued by greyhounds in open ground, which is called coursing; and sometimes by harriers or hare hounds, which is called hare hunting. It subsists on a great variety of vegetables, particularly those which possess milky qualities; the bark of young trees, and their tender shoots are likewise often taken by them for food. It produces generally three young ones at a time, and breeds at least three times in a year. The hare seldom quits its seat, or *form*, as it is called, during the day, unless compelled by the approach of enemies; but takes its range for food and excursion by night, always returning, it is said, to her habitation, by the same track by which it was left. In this form it will sometimes suffer itself to be approached so nearly, as almost to be trodden upon before it starts for escape; the first advances of the enemy having probably not attracted its attention, and those which immediately followed being attended by a species of fascination, or prostration of energy, the frequent effect of terror; but at length the imminence of its danger rouses every nerve and muscle to exertions which enable it to leave its enemies at a considerable distance. Its fleetness is such as to give it the advantage over many of its numerous adversaries. Its quickness of hearing, and comprehension of sight, by which last it receives the impression of objects on almost every side, are also important means of its protection.

HA'REBELL, in botany, a plant of the genus *Hyacinthus*, with campaniform or bell-shaped flowers.

HA'RE'S-EAR, in botany, a plant of the genus *Bupleurum*.

HA'RELIP, a single or double fissure of the upper lip, by which it is divided into two or three parts, and thus resembles the lip of the hare. It is a great deformity, but, fortunately, is easily curable by undergoing certain surgical operations.

THOUGH THE PRESENCE OF IMAGINARY GOOD CANNOT MAKE US HAPPY, THE ABSENCE OF IT MAY MAKE US MISERABLE.

THERE IS AN INTERMEDIATE STATE BETWIXT HARDNESS AND FLUIDITY, IN WHICH BODIES ARE MADE TO YIELD TO A CERTAIN FORCE.

MUSICAL GLASSES ARE OF GERMAN ORIGIN, BUT WERE REVIVED BY DR. FRANKLIN, AND BROUGHT TO GREAT PERFECTION BY THE MESSRS. CARTWRIGHT.

"SURE INFINITE WISDOM MUST ACCOMPLISH ALL ITS WORKS WITH CONSUMMATE HARMONY, PROPORTION, AND REGULARITY."—CHEYNE.

HA'REM, the apartments in which Mussulman princes confine their women, who are prohibited from the society of others. They are waited on by female slaves, and guarded by black eunuchs: the head of the latter is called *Kizlar-aga*. There are two kizlar-agas, one of the old, the other of the new palace, each of which has its harem. The one is occupied by the women of former sultans, and those who have incurred the displeasure of the reigning prince; the other by such as still enjoy his favour. The lady who first presents him with a male heir, is styled the *sultana*, by way of eminence. She must then retire into the old palace; but if her son ascends the throne, she returns to the new palace, and has the title of *sultana valide*. She is the only woman who is allowed to appear without a veil; none of the others, even when sick, are permitted to lay aside the veil, in the presence of any one except the sultan. When visited by the physician, their bed is covered with a thick counterpane, and the pulse felt through gauze. The life of the ladies of the imperial harem is spent in bathing, dressing, walking in the gardens, witnessing the voluptuous dances performed by their slaves, &c. The women of other Turks enjoy the society of their friends at the baths, or at each other's houses, appear in public accompanied by slaves and eunuchs, and enjoy a degree of liberty which increases as they descend in rank. But those of the sultan have none of these privileges. It is, of course, only the richer Moslems who can maintain harems: the poorer classes have generally but one wife.

HAR'ICOT, a kind of ragout of meats and roots.

HAR'LEQUIN, the principal character in pantomime, clad in a party-coloured dress, with a half-mask, and who is perpetually dancing, leaping, or performing tricks with his wonder-working wand. This character was first introduced into Italian comedy, where he united extravagant buffoonery with great corporeal agility.

HARMAT'TAN, the name given to a prevailing wind on the coast of Africa, which is of a peculiarly dry and parching character.

HARMON'ICA, or ARMON'ICA, a musical instrument, in which the sound is produced from glasses, blown as near as possible in the form of hemispheres, having each an open neck or socket in the middle. The diameter of the largest glass is nine inches, and that of the smallest three inches. Between these there are twenty-three different sizes, differing from each other a quarter of an inch in diameter. The largest glass in the instrument is G, including three complete octaves; and they are distinguished by painting the apparent parts of the glasses within side, every semitone white, and the other notes of the octave with the seven prismatic colours; so that glasses of the same colour, (the white excepted) are always octaves to each other. The method of extracting exquisite tones, by rubbing the finger on the brim of drinking-glasses, filled with water in different proportions, was an old discovery; but it remained for Dr. Franklin to construct the *harmonica*. "The advantages of this instrument," says Dr. Franklin, "are, that its tones are incomparably sweet beyond any other; that they may be swelled and softened at pleasure, by stronger or weaker pressures of the finger, and continued to any length; and that the instrument, once well tuned, never again wants tuning." Its disadvantages are, the difficulty of adjusting the tones by grinding; the extreme skilfulness necessary in the player; and the impracticability of performing upon it many of the ordinary operations of the musical art; for however much it excels all others in the delicacy and duration of its tones, yet it is confined to those of a soft and plaintive character, and to slow solemn movements.

HARMON'ICS, that branch of music which considers the differences and proportions of sound.

HAR'MONY, in music, the agreeable result or union of several musical sounds heard at one and the same time. *Natural harmony* consists of the harmonic triad or common chord. *Artificial harmony* is a mixture of concords and discords. *Figured harmony* is that in which, for the purpose of melody, one or more of the parts of a composition move, during the continuance of a chord, through certain notes which do not form any of the constituent parts of that chord. —— *Harmony*, as applied to nature, the necessary reciprocal accordance of causes and effects, by which the existence of one thing is dependent on that of another.——In matters of literature, we use the word *harmony* for a certain agreement between the several parts of the discourse. In architecture, *harmony* denotes an agreeable relation between the parts of a building. In painting, it signifies the union or connection between the figures, with respect to the subject of the piece; and also denotes the union or agreeable mixture of different colours.——*Harmony of the spheres*, a favourite hypothesis of Pythagoras and many other ancient philosophers, according to which, celestial music, imperceptible by the ears of mortals, was supposed to be produced by the sweetly tuned motions of the stars and planets. This harmony they attributed to the various proportionate impressions of the heavenly globes upon one another, acting at proper intervals.

HARMON'ICAL PROPORTION, in arithmetic and algebra, is that in which the first term is to the third, as the difference of the first and second is to the difference of the second and third: thus 2, 3, 6, are in harmonical proportion, because 2 : 6 : : 1 : 3. In four terms the 1st is to the 4th as the difference of the 1st and 2nd is to the difference of the 3rd and 4th: that is 9, 12, 16, 24, are in harmonical proportion because 9 : 24 : : 3 : 8. "To find an harmonical mean proportion between two terms:" Divide double their product by their sum. "To find a 3rd term in har-

monical proportion to two given terms:" Divide their product by the difference between double the 1st term and the 2nd term. "To find a 4th term in harmonical proportion to three terms given:" Divide the product of the 1st and 3rd term by the difference between double of the 1st and the 2nd term.

HAR'MOST, in Grecian History, a Spartan governor, regulator or prefect.

HAR'MOTOME, in mineralogy, a curious substance, called also *Cross-stone*, on account of the cruciform figure of its crystals, and the peculiarity of its composition. It chiefly occurs in metalliferous veins; its prevailing colour is white; it is translucent or semi-transparent, and hard enough to scratch glass.

HARP, a musical stringed instrument, of a triangular figure. It stands erect, and, when used, is placed at the feet of the performer, who produces its tones by the action of the thumb and fingers of both hands on the strings. Its origin is very variously ascribed; but whatever it may have been, its invention is manifestly very ancient; for it appears to have been in use (under various forms) with the Egyptians, Hebrews, Greeks, and Romans. The Anglo-Saxons excelled in playing on the harp. The Irish, Scots, and Welsh also made much use of this instrument; and with the Anglo-Normans it was equally popular. By the Welsh laws, a harp was one of the things that were necessary to characterize a freeman or gentleman; and none could pretend to this rank, who had not a harp, and was not able to play upon it. By the same laws, to prevent slaves from pretending to be gentlemen, it was expressly forbidden to teach, or to permit, them to play upon the harp; and none but the king, the king's musicians, and gentlemen, were allowed to have harps in their possession. The modern harp forms one of the most elegant objects to the eye, while it produces some of the most agreeable effects to the ear, of any instrument in use. There are generally 35 strings, but sometimes the number is extended to 43; and the compass usually extends from double A of the bass clef, to double G in the G clef.

HAR'PIES, in mythology, three rapacious winged monsters, supposed to be the goddesses of storms, and called Aello, Ocypete, and Celœno. They are so differently described by the poets, that it is difficult to say any thing definite concerning them. Hesiod represents them as young virgins, of great beauty; Vossius supposes them to be three winds; but both poets and artists appear generally to vie with each other in depicting them under the most hideous forms.

HARPOON', an iron instrument, formed at one end like a barbed arrow, and having a rope at the other, for the purpose of spearing the whale. As soon as the boat has been rowed within a competent distance of the whale, the harpooner launches his instrument; and the fish being wounded, immediately descends under the ice with amazing rapidity, carrying the harpoon along with him, and a considerable length of the line, which is purposely let down, to give him room to dive. Being soon exhausted with the fatigue and loss of blood, he re-ascends, in order to breathe, where he presently expires, and floats upon the surface of the water.——*Harpoon Gun*, an instrument for discharging harpoons at whales in preference to the common method of the hand. It consists of a kind of swivel, having a barrel of wrought iron, about two feet long, and is furnished with two locks, which act simultaneously, for the purpose of diminishing the liability of the gun missing fire.

HARP'SICHORD, a musical instrument with strings of wire, played on by means of keys, the striking of which moves certain little jacks, which also move a double row of chords or strings, stretched over four bridges on the table of the instrument. Since the invention of that superior instrument, the grand piano-forte, the use of the harpsichord is greatly diminished.

HAR'RIER, a small hound, with an acute sense of smelling, kept for hunting hares.

HAR'ROW, the name of a very useful instrument of agriculture, employed to prepare ploughed land for the seed, and to mix the seed with the soil after it has been sown.

HARTS'HORN, the horns of the common male deer, to which very extraordinary medicinal virtues were once ascribed, but which the experience of late years has considerably lessened. The articles denominated *spirit of hartshorn* and *salt of hartshorn*, though formerly obtained from the horns of different species of deer, are now chiefly prepared from bones. The former of these, which is a volatile alkali of a very penetrating nature, is an efficacious remedy in nervous complaints and fainting-fits; and salt of hartshorn has been successfully prescribed in fevers. The scrapings or raspings of the horns, under the name of *hartshorn shavings*, are variously employed in medicine. Boiled in water, the horns of deer give out an emollient jelly, which is said to be remarkably nutritive. The jelly of hartshorn is simply gelatine; the earth remaining after calcination, is phosphate of lime; the salt and spirit of hartshorn are muriate of ammonia, with a little animal oil.

HAR'USPICE, in Roman history, a person who pretended to foretel future events by inspecting the entrails of beasts sacrificed, or watching the circumstances attending their slaughter, or their manner of burning and the ascent of the smoke.

HAR'VEST MOON, an epithet applied to those moons which, in the autumnal months, rise on successive nights, soon after sunset, owing to the oblique ascension of the signs of the Zodiac, through which the moon is then passing.

HASTA'TI, among the Romans, were soldiers armed with spears, who were always drawn up in the first line of battle. These were picked out the next in age to

KING DAVID IS USUALLY PAINTED WITH A HARP, BUT WE HAVE NO TESTIMONY THAT THE HEBREW HARP WAS ANY THING LIKE OURS.

SOME SAY THAT THE HARP CAME TO US FROM THE NATIONS OF THE NORTH OF EUROPE, IN WHOSE LANGUAGES THEY TRACE ITS ETYMOLOGY.

the *velites*. At last they laid aside the spear, but still retained their name.

HATCH'EL, or HAC'KLE, a tool with which flax and hemp are dressed. It consists of long iron teeth, regularly set in a piece of board, being, in fact, a large kind of comb or card.

HATCH'ETINE, in mineralogy, a substance of the consistence of soft tallow, of a yellowish white or greenish yellow colour, found in South Wales.

HATCH'ING, the maturation of the eggs of birds, and production of the young ones alive. This is accomplished either by the natural warmth of the body of the parent bird, or by artificial heat. [See INCUBATION.]

HATCH'MENT, or FUNERAL ACHIEVEMENT, in heraldry, an armorial escutcheon, usually placed over the door of a person of distinction, deceased, and which points out the sex, conjugal connexion, and dignity of the person. These circumstances are denoted by the form and accompaniments of the field, and the *colour of the ground* of the hatchment: thus, "For a bachelor,"—the paternal arms are painted upon a shield, and accompanied with helmet, crest, and motto, and with the ground of hatchment (namely, the vacant canvass on each side of the shield) all black. "For a single woman,"—the paternal arms are painted upon a lozenge, with no other accompaniment, or ornament, than a gold-cord, loosely knotted, encompassing the field: the ground, in this case, is also all black. "For a widow,"—the paternal arms of the defunct are impaled with those of her late husband, in a lozenge, with a fancy gold-ornament round it; but with no accompaniment; the ground all black. "For a married woman leaving a husband,"—her paternal arms impaled with those of her husband, are painted upon a shield, without the armorial accompaniment; the sides of the shield being only ornamented. In this case the sinister side of the ground is black, to denote the death of the wife; the dexter side white, to show that the husband is living. "For a married man leaving a widow,"—the arms as before, upon a shield, with the accompaniments of helmet, crest, and motto: the dexter side of the ground, in this case, being black; the sinister, white. "For a man who dies, leaving a second wife,"—his shield of arms (not impaled) together with the accompaniments, are painted upon a black ground. On the dexter side of the shield is placed a small funeral escutcheon, bearing his paternal coat impaled with that of his first wife, the sinister side of this escutcheon being black, to denote her death; and on the sinister side of the shield is placed another escutcheon, bearing his arms impaled with those of his second wife; the dexter side of this escutcheon, being painted black, to denote his death; the sinister, white, to show that his second wife is still living. "The peer," is distinguished by his coronet and supporters; "the baronet," by his badge; "the knight companion," by the motto of his order; and "the bishop," by his mitre. In this case it is observable, that as, by the rules of heraldry, the arms of the office take precedency of those of the holder, the arms of the diocese are always impaled on the dexter side, those of the bishop on the sinister side, of the escutcheon: consequently on the hatchment for a bishop the sinister (and not the dexter) side of the ground is painted black.

HATCH'WAY, in ships, a square or oblong opening in the deck, affording a passage from one deck to another, or into the hold or lower apartments.

HAT'TI-SHERIFF, in Turkish polity, an order which comes immediately from the Grand Signior, who subscribes it usually with these words:—"Let my order be executed according to its form and import." These words are generally edged with gold, or otherwise ornamented; and an order given in this way is irrevocable.

HAU'TBOY, a musical wind instrument, shaped somewhat like the flute, but spreading and widening at the bottom, and sounded through a reed.

HAV'ERSACK, a kind of bag of strong coarse linen, to carry bread and provisions on a march.

HAW'FINCH, in ornithology, a species of *Loxia*, which feeds on haws and cherries.

HAWK, a bird of prey of the eagle and falcon tribe, the two principal species of which are the sparrowhawk and the goshawk, both used formerly in falconry. Most of the species are rapacious, feeding on birds and small animals.

HAWK'ING, the exercise of taking wildfowl by means of hawks, usually called falconry. In olden times, persons of high rank rarely appeared without their dogs and their hawks; the latter they carried with them when they journeyed from one country to another: and sometimes even when they went to battle, and would not part with them even to procure their own liberty when taken prisoners. These birds were considered as ensigns of nobility; and no action could be reckoned more dishonourable to a man of rank, than to give up his hawk. Upon the tapestry of Bayeaux, Harold is represented approaching the duke of Normandy, with his hawk upon his hand. Sometimes hawks formed part of the train of an ecclesiastic: Becket had hawks and hounds of every description with him, when he went to the court of France, as ambassador from England. Females of distinction were, occasionally represented with hawks on their hands, as we know, from an ancient sculpture, in the church of Milton-Abbey, where the consort of King Athelstan appears, with a falcon on her hand, tearing a bird. The Welsh had a saying in very early times, that "you may know a gentleman by his hawk, horse, and greyhound." Alfred the Great is said to have written a treatise on hawking; and from various sources the pastime may be traced in high favour, to the end of the Saxon era.——*Hawking*, in trade, the going

about with commodities to sell, after the manner of a hawker.

HAUYNE, a mineral so named in honour of the celebrated abbé Hauy. It occurs in Latium, and was at first called *latialite;* it has also been considered as allied to sapphire, and named *saphirin;* but more recent examination of its properties prove it to be identical with the species called *lazulite* by Hauy.

HAWK'WEED, in botany, a plant which bears a flower in the form of a marigold. There are several genera and species of plants thus designated.

HAWSE, a sea term, for the situation of the cables before the ship's stern, when she is moored with two anchors out from the bows, as 'a clear or open hawse,' 'a foul hawse,' &c.——*Hawse-hole*, a cylindrical hole in the bow of a ship through which a cable passes.——*Hawser*, a large rope, in size between a cable and a tow-line.

HAW'THORN, or WHITE THORN, in botany, a shrub or tree of the genus *Cratægus*, which bears the red berry called the *haw*. It grows naturally in all parts of Europe; is much used for hedges; and is admired both for the beauty of its foliage and the agreeable perfume of its blossoms.

HAY'WARD, a person who keeps the common herd or cattle of a town.——His office is to see that the cattle neither break nor crop the hedges of inclosed grounds; and to impound cattle that commit trespass therein, or are found running at large in the public roads, contrary to law.

HA'ZEL, in botany, a shrub of the genus *Corylus*, having male flowers growing in long cylindrical aments or catkins, at remote distances from the fruit on the same tree. The nuts grow in clusters, and are of three kinds, the common hazel nut, the cob nut, and the filbert, which latter are the most esteemed.

HEAD, in anatomy, the superior part of the body, placed on the neck, and consisting externally of the face and the hairy scalp; internally, of the brain and the medulla oblongata. [See Brain, Face, &c.] The whole head of the skeleton is spheroidical, composed as it were of two ovals a little depressed on each side: one of them is superior, the extremities pointing forward and backward; the other is anterior, the extremity being turned upwards and downwards, in such a manner as that one extremity of each oval meets, and is lost in the other, at the forehead.—In general, the human head may be considered as the standard, which may be traced, with gradual deviations, through the different classes, until it entirely ceases in the lower orders of animals.——*Head*, among mechanics, the upper and more solid part of inanimate bodies, as the head of a nail, the head of a gate, the head of a hammer.——*Head*, in architecture, an ornament of carved work, or sculpture, frequently serving as the key of an arch, or platband on other occasions. ——In the military art, the *Head of a work* is the front of it next the enemy.

HEAD'LAND, a point of land lying farther out at sea than the rest.——*Headland*, in husbandry, is taken to signify the upper part of land left for the turning of the plough.——*Head-lines*, in a ship, those ropes of all sails which are next to the yards, and by which the sails are made fast to the yard.——*Head-sea*, is when a great wave or billow of the sea comes right a-head of the ship, as she is in her course.——*Head-sails*, those which belong to the fore-mast, and bowsprit.——*Head-stall*, that part of a bridle that goes about the head; also, a kind of halter.——*Head-quarters*, the quarters or place of residence of the commander-in-chief of an army.

HEAD'-ACHE, a painful sensation in the nervous membranes of the head, produced by various causes, and attended with different symptoms, according to its different degrees and the place where it is seated.

HEALTH, that condition of the body, in which all the vital, natural, and animal functions, are performed easily and perfectly, and unattended with pain. The most perfect state of health is generally connected with a certain conformation and structure of the bodily organs, and well marked by certain external signs. To preserve health, it is necessary to be temperate in food, exercise, and sleep; to pay strict attention to bodily cleanliness; to abstain from spirituous liquors, and to guard against excess of all kinds. The Greeks and Romans deified health, representing it under the figure of a woman, whom they supposed to be the daughter of Æsculapius. We find the name of the goddess Salus, or Health, on many medals of the Roman emperors, with different inscriptions, as *Salus publica, Salus reipublicæ, Salus Augusti, &c.*

HEAR'ING, one of the five senses, of which the ear is the organ, with the help of the auditory nerves and membrane. The curious structures of the labyrinth and cochlea of the ear tend to make the weakest sounds audible. When a person exercises great attention in hearing, the *membrana tympani* is stretched so as to render it more susceptible of sounds, and better prepared to catch even the most feeble vibrations of the air. [See Ear.]

HEART, in anatomy, a hollow muscular organ, the function of which is to maintain the circulation of the blood. It is formed of a firm, thick, muscular tissue, composed of fibres, interlacing with each other. It is also composed of nerves, membranes, and vessels. It is divided in the middle by a strong partition, and on each side by two cavities, called ventricles, one the right, or pulmonic, and the other, the left, or systemic. Attached to each is a cavity, called the auricle, and from each proceeds a large tube, called an artery, one called pulmonic, and the other aorta; the first conveying blood to the lungs, and the other expelling it through the system. The blood which is returned from the veins is black, and is called *venous;* that which leaves the heart is red, and is called *arterial*. The two auricles contract and dilate simultaneously with each other, as do also the

HAY, IF STACKED WHEN DAMP, WILL IGNITE, BECAUSE THE MOISTURE INCREASES THE TEMPERATURE TILL IT PRODUCES PUTREFACTION.

THE HEART, BY ITS MUSCULAR CONTRACTION, DISTRIBUTES TWO OUNCES OF BLOOD FROM SEVENTY TO EIGHTY TIMES IN A MINUTE.

two ventricles. The dilatation is called *diastole*; the contraction *systole*. The causes of the alternate contraction and dilatation of the heart are difficult to decide: they are entirely involuntary, and dependent on the nervous system. By what means the blood is made to penetrate the thousand windings of the capillary system, and what causes impel it to flow back through the veins, are yet subjects of dispute among physiologists. The weight of the human heart with respect to the weight of the body, is greater in children than in grown persons, in the proportion of 3 to 2. Hence the weight of the heart, with respect to the weight of the body, lessens continually from the birth, till the bodies come to their full growth.——In the Scriptures, the *heart* is spoken of as the organ of sense, or seat of the understanding. And by a metonymy, it is used for an affection or passion: thus we say, in speaking of love, it is an affair of the *heart*.

HEAT, or CALORIC, that principle in nature, by the action of which fluids are evaporated, and solids are either dissipated in vapour, or rendered fluid, or vitrified. Our notions of the nature and properties of heat may be assisted by the following observations:—An intimate connection subsists betwixt light and heat, though it has not been hitherto discovered on what this connection depends. Both are emitted from the sun with the same velocity nearly; both are refracted from transparent bodies, and refracted by polished surfaces; in both, the matter seems exceedingly rare, and consequently the addition, or abstraction of either, cannot sensibly affect the weight of bodies, into which they are introduced: their parts never cohere, but mutually repel each other, and when forcibly accumulated they fly off from one another in all directions. Heat, however, differs from light in this particular, viz. the latter produces in us the sensation of vision, whereas the former excites a sensation which we call by the name of the substance itself. Heat attracts other bodies, and is attracted by them. In consequence of this mutual attraction, it enters into other substances, combines with them, and occasions changes in them.—The *sensation* of heat is produced by particles of heat passing into our bodies, and that of cold by heat passing out of them. We call any thing hot, when it communicates heat to bodies in its vicinity, and cold when it absorbs heat from them. The strength of the sensation depends on the rapidity with which the heat enters or leaves our bodies; and this rapidity is proportional to the difference between our bodies and the hot or cold substance, and to the conducting power of that substance.——*Heat* is considered one of the chief agents in chemistry, because its most obvious sources are chiefly referred to the general head of chemical combination. Thus, fire, or the combustion of inflammable bodies, is nothing more than a violent chemical action attending the combination of their ingredients with the oxygen of the air. Animal heat, is, in like manner, referable to a process bearing no remote analogy to slow combustion, by which a portion of *carbon*, an inflammable principle existing in the blood, is united with the oxygen of the air in respiration, and thus carried off from the system: fermentation is nothing more than a decomposition of chemical elements loosely united, and their reunion in a more perfect state of combination.——*Heat*, among geographers, the heat of different climates, which arises from the different angles under which the sun's rays strike upon the surface of the earth; added to which, the heat of different places is either increased or diminished by the accidents of situation, with regard to mountains and valleys, proximity to the sea, and the like.——*Heat*, among smiths and founders, the degree of heat requisite for iron work, namely, the blood-red heat, the smallest degree; the flame, or white heat, the second degree; and the sparkling, or welding heat, which is the strongest degree.——*Heat*, in racing, a certain prescribed distance which a horse runs on the course.

HEATH, in botany, *Erica*, a genus of beautiful shrubby plants, of which more than 250 species are known. Some of them are natives of Europe, and grow wild; but the greater part are found in South Africa, and are greatly admired on account of their lasting verdure, their light foliage, and the elegance of their flowers.

HEAV'EN, literally the sky, or azure vault which spreads above us like a hollow hemisphere, and appears to rest on the limits of the horizon. Modern astronomy has taught us, that this blue vault is, in fact, the immeasurable space in which our earth, the sun, and all the planets, revolve. In metaphorical language, this space is called the abode of the Deity, and the seat of the souls of the just in the life to come. In these latter senses, it is sometimes called the empyrean, from the splendor by which it is characterized. It is also sometimes called the firmament. The word which, in the first chapter of Genesis, is translated *firmament*, was corrupted, it is said, by the Septuagint translators, and should be rendered *expanse* or *extension*. St. Paul speaks of the *third heaven*; and the orientals always describe seven heavens, or more. The foundation of the doctrine of several heavens was this: the ancient philosophers assumed there were as many different heavens as they saw bodies in motion: they considered them solid, although transparent, and supposed the blue space extended over our heads firm as a sapphire. They could not conceive that otherwise they could sustain those bodies; and they deemed them spherical, as the most proper form for motion. Thus, there were seven heavens for the seven planets, and an eighth for the fixed stars. Ptolemy discountenanced this system. He said, the deities (by which name he calls the stars, for they were adored in his time), moved in an ethereal fluid. It was, however, by very slow degrees that men became acquainted

with the true science which instructs us in the laws of celestial motion, and the magnitudes, distances, &c. of those effulgent orbs which deck the vast expanse. The heavens then, to follow the path of the Newtonian or true system, are filled with a fluid much finer and thinner than this air, and extending beyond all limits of which we have any conception. There being nothing visible to us in the remote part of the heavens, we can only consider them as the places of the stars. We shall have a vast idea of this space if we consider that the largest of the fixed stars, which are probably the nearest to us, are at a distance too great for the expression of all that we can conceive from figures, and for all means of admeasurement. The sun, which in that little space of the heavens that makes the system of which our world is a part, is in reality nothing more than a fixed star. Round him revolve the planets, among which Jupiter alone is in its solid contents nine hundred times as large as our earth. But these and the other particulars will be found under separate heads; to which we refer.

HEBDOM'ADARY, a member of a chapter or convent, whose duty it is to officiate in the choir, rehearse the anthems and prayers, and perform other services, which on extraordinary occasions are performed by the superiors.

HEBDOM'ARY, a solemnity of the ancient Greeks, in which the Athenians sung hymns in honour of Apollo, and carried in their hands branches of laurel. It was observed on the seventh day of every lunar month; hence the name.

HE'BRAISM, an idiom or manner of speaking peculiar to the Hebrew language.

HE'BREW, the language spoken by the Jews, and which appears to be the most ancient of all the languages in the world. The books of the Old Testament are the only pieces to be found, in all antiquity, written in pure Hebrew; and the language of many of these is extremely sublime. But Hebrew literature, independently of its containing the records of a divine revelation, possesses a peculiar scientific interest. It surpasses in antiquity, general credibility, originality, poetic strength, and religious importance, that of any other nation before the Christian era, and contains most remarkable memorials and trustworthy materials for the history of the human race, and its mental development.—— The *Epistle to the Hebrews*, a canonical book of the New Testament. The Hebrews, to whom this epistle was addressed, were the believing Jews of Palestine, and its design was to convince them of the insufficiency and abolishment of the ceremonial and ritual law. In order to which the apostle undertakes to shew, first, the superior excellency of Christ's person above that of Moses; secondly, the superiority of Christ's priesthood above the Levitical; and thirdly, the mere figurative nature, and utter insufficiency, of the legal ceremonies and sacrifices.

HECATE'SIA, in Grecian antiquity, a public entertainment given by the Athenians every new moon, in honour of Hecate.

HEC'ATOMB, amongst the Greeks, was a sacrifice consisting of a hundred oxen offered upon some very extraordinary occasion.—*Hecatomb*, in its most general sense, signifies no more than a sacrifice of a hundred animals; but the ox being the chief of animals used in sacrifice, gave derivation to the word.

HECTIC FEVER, in medicine, an habitual fever, or one which is slow and continued, ending in a consumption.

HEC'TOGRAM, in the French system of weights and measures, a weight containing 100 grains; equal to 3 ounces, 2 gros, and 12 grains French.

HEC'TOLITER, a French measure of capacity for liquids, containing 100 liters; equal to a tenth of a cubic meter, or 107 Paris pints.

HECTOM'ETER, a French measure equal to 100 meters; the meter being the unit of a lineal measure. It is equivalent nearly to 308 French feet.

HEDENBERG'ITE, in mineralogy, an ore of iron, in masses, composed of shining plates, which break into rhombic fragments.

HEDERA'CEOUS, in botany, pertaining to, or growing like, ivy.

HED'ERA, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are shrubs, consisting of the different kinds of ivy.

HED'GEHOG, in zoology, the *Erinaceus*, a small animal which feeds on worms, insects, frogs, fruit, and the roots of vegetables. It is remarkable for the sharp prickles which enclose it, and for its power of rolling itself into a globe of its own prickles, when in danger; but it unfolds on being put into water. One of the most interesting facts in the natural history of the hedgehog was announced in 1831 by M. Lenz; and as it has since been confirmed by the observations of Professor Buckland and other naturalists, we deem it too important to be omitted in this or any other description that may in future be given of this animal. It is, that the most violent animal poisons have no effect on it; a fact which renders it of peculiar value in forests, where it appears to destroy a great number of noxious reptiles. Repeated experiments fully warrant us in saying, that the venom of the adder (to whom the hedgehog is a mortal enemy) has not the slightest effect upon it; and a German physician asserts, that he gave one several strong doses of prussic acid, of opium, and of corrosive sublimate, none of which did it any harm.

HEGI'RA, the epoch of the flight of Mahomet from Mecca, July 10, 622, whence Eastern nations date the year of 354 days; which is found by subtracting 622 from our year, and then multiplying by 365.52, and dividing by 354.

HEIR, in law, the person who succeeds another by descent to lands, tenements, and hereditaments, being an estate of inheritance, or an estate in fee; because

nothing passes by right of inheritance but in fee. We give the title to a person who is to inherit after the death of an ancestor, and during his life, as well as to the person who has actually come into possession.——*Heir-apparent*, is a person so called in the lifetime of his ancestor, at whose death he is heir at law.——*Heir-presumptive*, one who, if the ancestor should die immediately, would, in the present circumstances of things, be his heir; but whose right of inheritance may be defeated by the contingency of some nearer heir being born.

HEIR'-LOOM, any furniture or personal chattel, which by law descends to the heir with the house or freehold.

HELI'ACAL, in astronomy, a term applied to the rising or setting of the stars, or, more strictly speaking, to their emersion out of and immersion into the rays and superior splendour of the sun. A star rises heliacally when, after it has been in conjunction with the sun, and on that account invisible, it gets at such a distance from the sun as to be seen in the morning before the rising of that luminary.

HELIAN'THUS, or the Sun-flower, in botany, a genus of plants, class 19 *Syngenesia*, order 3 *Polygamia frustanea*, containing more than twenty species, of which the most curious is the *Helianthus gyrans*, or moving plant, which is found in Bengal, and on the banks of the Ganges: it has a constant and voluntary motion, consisting in an alternate meeting and receding of the leaflets, a motion which does not seem to depend on any external stimulus.

HEL'ICITE, fossil remains of the *helis*, or snail-shell.

HELIOCEN'TRIC. In astronomy, the *heliocentric latitude of a planet*, is the inclination of a line drawn between the centre of the sun and the centre of a planet, to the plane of the ecliptic.——*Heliocentric place of a planet*, the place of the ecliptic wherein the planet would appear to a spectator placed at the centre of the sun.

HELIOM'ETER, an instrument for measuring with exactness the diameter of the heavenly bodies.

HE'LIOSCOPE, in optics, a sort of telescope, peculiarly fitted for viewing the sun without pain or injury to the eyes.

HE'LIOSTATE, an instrument by which a sunbeam may be steadily directed to one spot.

HE'LIOTROPE, in mineralogy, a subspecies of rhomboidal quartz, of a deep green colour. It is usually variegated with blood red or yellowish dots, and is more or less translucent. It is generally supposed to be chalcedony, coloured by green earth or chlorite.——In botany, the Sunflower.

HELIOTRO'PIUM, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are mostly annuals or shrubs.

HELISPHER'ICAL, spiral. The *helispherical line* is the rhomb line in navigation, so called because on the globe it winds round the pole spirally, coming nearer and nearer to it, but never terminating in it.

HE'LIX, in architecture, a spiral line or something that is winding; as, a winding staircase; or a little volute under the flowers of the Corinthian capital.——In anatomy, the whole circuit or extent of the auricle, or external border of the ear.

HELL, in the translation of the Scriptures, and in the Apostle's creed, is used to signify the grave, or place of the dead. In the New Testament, it also signifies the region of the wicked after death. The ancient Jews seem to have had no knowledge of any but temporal punishments, and the law threatens no other: but, after they became conversant with the Greeks, they adopted many of their opinions on this subject, and added some inventions of their own. They believed hell to be in the centre of the earth, and that there were three roads leading to it; one through the wilderness, by which Dathan and Abiram passed; another through the sea; and the third in Jerusalem.—Amongst the Greeks and Romans, the idea of hell varied according to the fancy and imagination of each individual. The general idea, however, was, that hell was divided into two mansions, the one called *Elysium*, on the right hand, pleasant and delightful, appointed for the souls of good men; the other called *Tartarus*, on the left, a region of misery and torment, appointed for the wicked.

HEL'LEBORE, in botany, *Helleborus niger*, or Christmas rose, an exotic plant, the root of which is employed medicinally. The ancients esteemed it as a powerful remedy in maniacal cases; at present it is exhibited principally as an alterative; and it is also recommended in dropsies, and some cutaneous diseases. There is also the white hellebore of the genus *Veratrum*. Both are acid and poisonous, though valuable in medicine.

HELLEBO'RUS, in botany, a genus of plants, class 13 *Polyandria*, order 7 *Polygynia*. The species are perennials.

HEL'LENISM, a phrase in the idiom, genius, or construction of the Greek tongue. This word is only used when speaking of authors who, writing in a different language, express themselves in a phraseology peculiar to the Greek.

HELLENISTIC, an epithet for whatever pertained to the Hellenists. The *Hellenistic language* was the Greek spoken by the Jews who lived in Egypt and other parts where the Greek tongue prevailed. In this language, it is said, the Septuagint was written, and also the books of the New Testament; and that it was thus denominated to shew that it was Greek filled with Hebraisms and Syriacisms.

HELM, an instrument suspended along the hindpart of a ship's stern-post, where it turns upon hinges to the right or left, serving to direct the course of a vessel, as the tail of a fish guides the body. The helm is usually composed of three parts, the rudder, the tiller, and the wheel; except in small ships, where the wheel is unnecessary:—There are several terms in the naval language relating to the helm; as,

ALKALIES, SUCH AS POTASH AND AMMONIA, CONVERT INTO A DARK PURPLE-RED TINT, THE PALE SOLUTION OF HEMATINE.

bear up the helm; that is, let the ship go more large before the wind; *helm a mid-ship*, or *right the helm*, that is, keep it even with the middle of the ship; *port the helm*, put it over the left side of the ship; *starboard the helm*, put it on the right side of the ship.

HEL'MET, a headpiece, or armour for the head, which was formerly the noblest part of coat armour. It covered both the head and face, only leaving an aperture in the front secured by bars, which was called the visor. It is still used in heraldry by way of crest over the shield or coat of arms, in order to express the different degrees of nobility, by the different manner in which it is borne.——The modern helmet is worn by some of the cavalry to defend the head against the broad-sword.

HE'LOTS, the name given to certain slaves in Sparta, who were originally inhabitants of the town of Helos, but carried off and reduced to slavery by the Heraclidæ, about 1000 B.C. They differed from other Greek slaves in not belonging individually to separate masters; being the property of the state, which alone had the disposal of their lives and freedom.

HELVET'IC, an epithet designating what pertains to the *Helvetii*, the ancient inhabitants of Swisserland, or to the modern states and inhabitants of the Alpine regions; as the *Helvetic* confederacy, &c.

HEM'ACHATE, in mineralogy, a species of agate, of a blood colour.

HEM'ATIN, or HEM'ATINE, in chemistry, the colouring principle of logwood, of a pale red colour and bitterish taste.

HEM'ATITE, in mineralogy, the name of two ores of iron, the *red* and the *brown* hematite. They are both of a fibrous structure, their fibres usually diverging, or even radiating from a centre.

HEMERALO'PIA, in medicine, nocturnal blindness; a defect in the sight, which consists in not being able to see in the evening, though the sight is perfect enough in the day-time. At sun-set, objects appear to persons afflicted with this complaint as if covered with an ash-coloured veil, which gradually changes into a dense cloud, and appears to intervene between the eyes and surrounding objects. When brought into a room faintly lighted by a candle, where all the bystanders can see tolerably well, they can scarcely discern any object, and at moon-light their sight is still worse.

HEMEROCAL'LIS, in botany, a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*. The species are bulbs, of the lily kind.

HEM'I, a Greek word used in the composition of several terms borrowed from that language. It signifies *half*, the same as *semi*, and *demi*: thus, *hemiplegia* is a palsy of one *half* of the body; *hemistich*, *half* a verse; *hemicycle*, a *semi*-circle.

HEMICRA'NIA, in medicine, a species of head-ache, which affects only one half or side of the head.

HEMIOP'SIA, in medicine, a defect of vision in which the person sees the half, but not the whole of an object.

HEMIPLE'GIA, in medicine, a paralytic affection of one side of the body.

HEMIP'TERA, in entomology, the second order of insects, which have the wings half crustaceous and half membraneous, as cockroaches, crickets, grasshoppers, &c.

HEM'ISPHERE, in astronomy, one half of the sphere. The equator divides the sphere into two parts, called the *northern* and the *southern hemispheres*. The horizon also divides the sphere into two parts, called the *upper* and *lower hemispheres*. Hemisphere is also used for a map or projection of half the terrestrial globe, or half the celestial sphere, on a plane, and is then often called *planisphere*.

HEMISPHER'OIDAL, in geometry, an appellation given to whatever approaches to the figure of a hemisphere, but is not exactly so.

HEM'ISTICH, in poetry, denotes half a verse, or a verse not completed. In reading common English verse, a short pause is required at the end of each hemistich.

HEM'LOCK, a genus of plants called *Conium*, of which the species *maculatum*, or greater hemlock, is one of our few poisonous plants, but now used in medicine.

HEMP, a fibrous plant, of the *Diœcia* class, and of the genus *Cannabis*; well known for its use in the manufacture of cordage and cloths. The stem is herbaceous, upright, simple, slightly pilose, attaining the height of from four to six feet; the male flowers, which are on separate stems, are green, resembling those of the hop; the female flowers are inconspicuous, and the fruit is a little, hard, bivalve capsule, containing a single seed. It may be planted upon any land; the poorer producing that which is fine in quality, though small in quantity; and the richer and stronger, that which is abundant in the former, but coarse in the latter. Besides its use in manufactures, hemp is said to recommend itself to the agriculturist, by driving away almost all the insects that feed upon other vegetables. Hence, in some parts of Europe, a belt of this plant is sown round gardens, or other spots, to preserve them. Only the coarser kinds of hemp are employed in making cordage; the finer being used for cloth, which though incapable of receiving the delicacy of linen, is incomparably stronger, equally susceptible of bleaching, and possessed of the property of improving its colour by wear. The English hemp is much superior in strength to that which grows in any other country. Next to this is the Russian, from which sacking is usually made. A large quantity of Russia-sheeting, coarser at the price than any other foreign cloth, is imported into England on account of its strength. The great importance of hemp to the maritime interests of the United Kingdom, occasions it to form a considerable article of commerce. The cordage and sails of a first-rate ship of war are said to consume 180,000 lbs. of rough hemp.

HEN, a female bird of any species, but

HEMP-SEED CONTAINS AN OIL WHICH IS EMPLOYED FOR MAKING SOFT SOAP, FOR PAINTING, AND FOR BURNING IN LAMPS.

applied particularly to the female of the domestic fowl of the gallinaceous kind.

HEN'BANE, in botany, the *Hyoscyamus*, of several species. The roots, leaves, and seeds are poisonous, but, from its narcotic qualities, it is occasionally serviceable in medicine.

HENDEC'AGON, in geometry, a figure of eleven sides, and as many angles.——In fortification, *hendecagon* denotes a place defended by eleven bastions.

HENDECASYL'LABLES, in poetical composition, a verse of eleven syllables. Among the ancients it was particularly used by Catullus, and is well adapted for elegant trifles.

HE'PAR SUL'PHURIS, or Liver of Sulphur, in chemistry, the name commonly given to a sulphuret made either with potash or soda. It has a disagreeable fetid smell, but is in high esteem with some as a medicine to decompose corrosive sublimate, when taken into the stomach.

HEPAT'IC, in medicine, an epithet for whatever belongs to the liver.——*Hepatic artery*, the artery which nourishes the substance of the liver.——*Hepatic duct*, the trunk of the biliary pores. It runs from the sinus of the liver towards the duodenum, and is joined by the cystic duct.

HEPAT'IC AIR, in chemistry, sulphuretted hydrogen gas; or inflammable air variously combined with sulphur, alkalies, earths, and metals.

HEPAT'IC MERCU'RIAL ORE, compact sulphuret of mercury or cinnabar, a mineral of a reddish brown colour. It occurs in compact masses with an even or fine grained structure, and has some lustre.

HEP'ATITE, a name given to the fetid sulphates of barytes. It sometimes occurs in globular masses, and is either compact or of a foliated structure. By friction or the application of heat it exhales a fetid odour, like that of sulphuretted hydrogen.

HEPATI'TIS, in medicine, inflammation of the liver, of which there are two kinds, the acute and chronic. Both require attentive medical treatment. In warm climates the liver is more apt to be affected with inflammation than perhaps any other part of the body, probably from the increased secretion of the bile which takes place when the blood is thrown on the internal parts, by an exposure to cold; or from the bile becoming acrid, and thereby exciting an irritation of the part.

HEP'TAGON, in geometry, a figure of seven sides and seven angles.——In fortification, a place is termed a heptagon that has seven bastions for its defence.

HEPTAG'ONAL NUMBERS, in arithmetic, a sort of polygonal numbers, wherein the difference of the terms of the corresponding arithmetical progression is 5. One of the properties of these numbers is, that if they be multiplied by 40, and 9 be added to the product, the sum will be a square number.

HEPATOSCO'PIA, a mode of divination, by which conjectures concerning futurity were drawn from the appearances exhibited by the liver of the victim offered in sacrifice.

HEP'TACHORD, in ancient poetry, verses sung or played on seven chords or different notes; in which sense the word was applied to the lyre when it had but seven strings.

HEPTACAP'SULAR, a term in botany, signifying that the plant has seven cells or cavities for seeds.

HEPTAGYN'IAN, in botany, an epithet for a plant having seven pistils.

HEPTAN'DRIA, the seventh class of the Linnæan system of plants, containing four orders, *Monogynia*, *Digynia*, *Tetragynia*, and *Heptagynia*.

HEP'TARCHY, a government exercised by seven persons; or, a nation divided into seven governments.—— *Saxon heptarchy*, the seven kingdoms existing in England, between the fifth and ninth centuries. These kingdoms were severally named, 1. Kent; 2. Sussex; 3. Wessex; 4. Essex; 5. Northumberland; 6. East-Angleland; 7. Mercia. The *heptarchy* was formed by degrees; but it may be said to have commenced in 449, when Hengist arrived on the island. In 827 Egbert was enabled, by a combination of circumstances, to assume the title of King of England; but, in reality, three of the kingdoms, Northumberland, East Angleland, and Mercia, were still governed by their own kings, though those kings were his vassals and tributaries. The kingdoms he actually governed were Kent, Sussex, Wessex, and Essex.

HERACLI'DÆ. *The return of the Heraclidæ into Peloponnesus*, in chronology, constitutes the beginning of profane history; all the time preceding that period being accounted fabulous. This return happened in the year of the world 2682, a hundred years after they were expelled, and eighty after the destruction of Troy.

HER'ALD, the title of an officer, whose duty it anciently was to declare war, to challenge in battle and combat, to proclaim peace, and to execute martial messages; but who is, at present, to conduct royal processions, the creations of nobility, and the ceremonies of knighthood; to publish declarations of war, not to the enemy, but at home; to proclaim peace; to record and blazon armorial bearings; and to regulate abuses in arms, under the authority of the earl-marshal, by whom he is created. The heralds were formed into a college by Richard the Third. The three chief heralds are called kings at arms, the principal of which is Garter; the next is called Clarencieux, and the third Norroy; these two last are called provincial heralds. Besides these there are six other inferior heralds, viz. York, Lancaster, Somerset, Richmond, Chester, and Windsor; to which, on the accession of king George I. to the crown, a new herald was added, styled Hanover herald; and another styled Glocester king at arms.——*Heralds*, amongst the ancient Greeks and Romans, were held in great estimation, and looked upon as sacred. Those of Greece carried in their hands a rod of

laurel, round which two serpents, without crests, were twisted as emblems of peace.

HER'ALDRY, the science which teaches the true use of, and laws relating to, armorial bearings; viz. how to blazon or describe them in proper terms, and how to marshal or dispose the different arms in an escutcheon or shield. The introduction of armorial bearings, in place of the images and statues of the Romans, (known among them by the term *jus imaginum*), is to be ascribed to the northern tribes who overran Europe on the decline and fall of the empire. Although they were at first purely military, yet, by being transmitted to their posterity, they became badges of civil rank and honour; and, in course of time, other circumstances gave rise to bearings which were not purely military. Thus, on the establishment of the feudal system, the tenants of the king, or the great lords, represented on their shields the services they owed to their superiors by way of an acknowledgment of their fidelity, whence originated roses, cinque-foils, spur-rowels, bows and arrows, hunting-horns, ships, &c. When, inspired with religious enthusiasm, the martial youth of almost all Europe left their homes, about the end of the 11th century, to conquer the Holy Land, the use of arms became more general and necessary. In order to distinguish the nations, armies, and families, the princes and commanders chose their symbols, sometimes in commemoration of the exploits and events of the campaign, or of the dignity of the commander, and sometimes from the cause in which they were engaged. This probably gave rise, or at least made it more common, to introduce the figure of the cross, which is borne in a diversity of forms. In like manner, on the introduction of tournaments, they are supposed to have given rise to the fesse, pale, bend, and other ordinaries, which represented the fillets or lists of different kinds which were worn by the combatants and those who attended. And it was from the practice of a herald's describing and recording the names, arms, and proofs of nobility, of the knights at tournaments, that the science took its name. — [So numerous are the heraldric terms, that to attempt to give them, with their definitions and distinctions, would occupy several pages, however rigidly we might pursue our plan of condensation. Those, however, of any real import to the general reader, are given as separate articles in their alphabetical order.]

HERBA'RIUM, or HORTUS SIC'CUS, a collection of specimens of plants carefully dried and preserved. Various methods have been adopted by botanists for obtaining a hortus siccus; but that of pressing the plants that are to be dried, in a box of sand or with a hot smoothing iron, has been recommended. If pressure be employed, that is best effected by means of a botanical press made for the purpose, in which the plants are put, with sheets of dry paper between. At first they ought to be pressed gently, and occasionally taken out in order to see that none of the leaves are rumpled or folded. As they continue to dry, the pressure may be increased. When properly dried, the specimens should be placed in sheets of writing paper, and slightly fastened by making the top and bottom of the stalk pass through a slip of the paper, cut for the purpose. The name of the genus and species should be written down, the place where it was found, the nature of the soil, and the season of the year. The specimens may be collected into general orders and classes, and titled and preserved in a portfolio or cabinet.

HERB, a plant or vegetable with a soft or succulent stalk or stem, which dies to the root every year, and is thus distinguished from a shrub, which has ligneous or woody stems. In botanic science, however, it means that part of a vegetable which rises from the root, and comprehends the stem and leaves, &c.——The fourth tribe into which Linnæus divided the vegetable kingdom is termed *Herbæ*.

HER'BAL, a book giving an account of the names, natures, and uses of plants; their classes, genera, and species.

HER'BORIZE, a botanical term, signifying to search for plants, or to seek new species of plants, with a view to ascertain their character, and to class them.

HERCULA'NEUM, an ancient city of Naples, overwhelmed by an eruption of Mount Vesuvius in the reign of Titus: it was discovered in the year 1689, since which time many manuscripts, paintings, statues, and other relics of antiquity, have been discovered. From the excavations that have been made from time to time, the ancient streets and buildings have been, as it were, again thrown open, and the domestic affairs of the ancients revealed to the eyes of modern archæologists. Since 1828 new excavations have taken place, and a splendid private house has been discovered, with a suite of chambers, and a court in the centre. There is a separate part of the mansion allotted to females, a garden surrounded by arcades and columns, and also a grand saloon, which probably served for the meeting of the whole family. Another house, also discovered, was very remarkable, from the quantity and nature of the provisions in it, none of which had been disturbed for eighteen centuries, for the doors remained fastened, in the same state as they were at the period of the catastrophe which buried Herculaneum. The family which occupied this mansion was, in all likelihood, when the disaster took place, laying in provisions for the winter. The provisions found in the store-rooms consist of dates, chestnuts, large walnuts, dried figs, almonds, prunes, corn, oil, pease, lentils, pies, and hams. The internal arrangement of the house, the manner in which it was ornamented, all, in fact, announced that it had belonged to a very rich family and to admirers of the arts; for there were discovered many pictures, representing Polyphemus and Galatea, Hercules and the three Hesperides, Cupid and a Bacchante,

Mercury and Io, Perseus killing Medusa, and others. There were also in the same house, vases, articles in glass, bronze and terra cotta, as well as medallions in silver, representing in relief Apollo and Diana.

HERCU'LEAN, an epithet expressive of the great labour necessary to execute any task; such as it would require the strength or courage of Hercules to encounter or accomplish.

HER'CULES, in astronomy, a constellation in the northern hemisphere, (named from the hero of mythologic fable), containing 113 stars.

HEREDIT'AMENTS, in law, lands, tenements, and whatever immoveable things a person may have to himself and his heirs, by way of inheritance; and which, if not otherwise bequeathed, descend to him who is next heir, and not to the executor, as chattels do.

HERED'ITARY, an appellation given to whatever belongs to a family by right of succession, from heir to heir. Some monarchies are hereditary, and others elective; and some hereditary monarchies descend only to the heirs male, as in France; but others, to the next of blood, as in Spain, England, &c.——*Hereditary* is also applied to offices and posts of honour annexed to certain families; thus the office of earl-marshal is hereditary in the family of Howard. It is also figuratively applied to good or ill qualities, supposed to be transmitted from a parent to a child; as, hereditary bravery, hereditary pride.

HER'ESY, an error in some fundamental doctrine of the Christian faith, or a private opinion different from that of the orthodox church.——The origin of *heretics* is to be referred to the time when a Christian church was publicly established, and began to acknowledge certain dogmas as orthodox, and to designate opinions at variance with them as false. Yet a diversity of opinions always existed on certain points, because the Bible is a book of faith, treating of divine subjects in the imperfect language of men, and therefore admitting, in many passages, different explanations, according to preconceived views. How awful, then, and how repulsive to the fine principles of that religion which inculcates the precepts of mercy and good-will to man, is that persecuting spirit which, at different periods, has sacrificed whole hecatombs of unoffending victims at the shrine of ignorance and bigotry!

HER'ETOCH, among our Saxon ancestors, signified the leader or commander of an army, or the commander of the militia in a country or district.

HER'IOT, in law, the fine paid to the lord of the manor, by copyholders, on the death of the tenant.

HER'ISSON, in fortification, a beam or bar armed with iron spikes pointing outwards, and turning on a pivot; used to block up a passage.

HERMAPH'RODITE, a term to designate the union of the two sexes in the same individual.——In botany, a flower that contains both the anther and the stigma within the same calyx, or on the same receptacle.

HERMENEU'TICS, the art of finding the meaning of an author's words and phrases, and of explaining it to others. The word is seldom used except in reference to theological subjects.

HERMET'ICAL SEALING, among chemists, a method of stopping glass vessels so closely that the subtilest spirit cannot escape. This is usually done by heating the neck of a vessel in the flame of a lamp with a blowpipe, till it be ready to melt, and then, with a pair of hot pincers, twisting it close together.

HER'MIT, a person who lives in total seclusion from the world. It is usually applied to one who lives in solitude, for the purpose of religious contemplation and devotion.

HER'NIA, in surgery, a rupture; a tumour formed by the displacement of a soft part, which protrudes by a natural or accidental opening, from the cavity in which it is contained. As soon as a patient perceives that he is affected with a hernia, he should have recourse to medical advice, for the disease is then in its most favourable state for treatment. The hernia is immediately reduced, and must then be subject to a constant compression, which is done by means of a truss.

HE'RO, in pagan mythology, an illustrious mortal, but supposed by the populace to partake of immortality, and after his death to be placed among the gods.——*Hero* is also used in a more extensive sense for a great, illustrious, and extraordinary personage; particularly one eminent for valour, courage, intrepidity, and other military virtues.——*Hero*, in a poem or romance, is the principal personage, or the one who has the principal share in the actions related; as Achilles in the Iliad, Ulysses in the Odyssey, &c.——*Heroic verse*, hexameter verse, so called because it is used by poets in their heroic poems.——*Heroic age*, that age or period of the world wherein the heroes, or demigods, are supposed to have lived. The heroic age coincides with the fabulous age.

HER'ON, in ornithology, a large bird of the genus *Ardea*, distinguished by having a long bill, a compressed body, long slender legs, and moderate wings. Herons are very expert fishers, and take prey either by wading after it where the water is shallow, or by diving from the air, when the object of their pursuit appears near the surface of the water. They digest an enormous load of food in a short time, and again return to their destructive occupation with new vigour and appetite.

HER'PES, in medicine, a term applied to several cutaneous eruptions from their tendency to spread or creep from one part of the skin to another. They are generally seen in small distinct clusters, accompanied with itching, and terminating in furfuraceous scales. This disease takes various names according to its form or the part

affected; as the ring-worm, erysipelas, &c.

HER'RING, in ichthyology, (*Clupea harengus* of Linnæus) a prolific fish, common in most seas, where they are found in immense shoals. The grand shoal of many millions, divided into columns of five or six miles in length, and about four in breadth, appears at the Shetland Isles in June, where they divide, and branch off in all directions. Their progress is marked by the number of birds which follow them to prey upon them. Those which flock to the British coasts are to be found in the greatest number off Yarmouth, the mart for herrings. This instinct of migration was given to the herrings, that they might deposit their spawn in warmer seas. It is not from deficiency of food that they set themselves in motion; for they come to us full of fat, and on their return are almost universally observed to be lean and out of condition. They are full of roe in the end of June, and continue in perfection till the beginning of winter, when they deposit their spawn. [See FISHERIES.]

HERSE, in fortification, a harrow full of iron spikes.

HES'PER, in astronony, the evening star; an appellation given to the planet Venus, when it sets after the sun.

HET'EROCLITE, in grammar, a word which is irregular or anomalous, either in declension or conjugation, or which deviates from the ordinary forms of inflection in words of a like kind.

HETEROPHYL'LOUS, in botany, producing a diversity of leaves.

HETEROS'CII, in geography, those inhabitants of the earth which have their shadows falling but one way, as those living between the tropic and polar circles.

HEX'AGON, in geometry, a figure of six sides and angles.

HEXAGYN'IA, in botany, an order of plants which have six styles in the flowers.

HEXAHE'DRON, in geometry, one of the five regular solids, being nearly a cube.

HEXAM'ETER, in ancient poetry, a verse consisting of six feet, the first four of which may be either dactyls or spondees, the fifth must regularly be a dactyl, and the sixth always a spondee.

HEXAN'DRIA, in botany, one of the Linnæan classes, comprehending those plants which have six stamens in each flower, as the pine-apple, bamboo, spiderwort, lily of the valley, arrow-grass, &c.

HEX'ASTYLE, in architecture, a building with six columns in front.

HIATUS, an unpleasant opening of the mouth, when vowels end and begin words; also any deficiency in a manuscript which destroys the connexion.

HI'BERNACLE, in botany, the winter quarters of a plant, that is, a bulb or a bud, in which the embryo of a future plant is enclosed by a scaly covering, and protected from injuries during winter.

HIDE, a word formerly used in land-measure, for such a space as might be ploughed with one plough; or, as much as would maintain the family of a *hide*, or mansion-house. According to some, a *hide* was sixty acres, others make it eighty, and others a hundred. The quantity, very probably, was always determined by local usage only.

HI'DEBOUND, in farriery, a term for a disease in horses and cattle when the skin cleaves to the sides.——Also a term in botany; a tree being said to be *hidebound*, when the bark is so close or firm as to impede the growth.

HIDES, the skins of large cattle, such as bullocks, cows, horses, &c. either in the raw or cured state. Vast quantities are annually imported into Great Britain from South America, the European continent, Morocco, the Cape of Good Hope, &c.

HI'ERARCHY, a term literally signifying *holy government*, and applied sometimes to the supposed polity, or social constitution, among angels. Also, ecclesiastical government, or the subordination of rank among the different orders of clergy.

HIEROGLYPH'ICS, in antiquity, mystical characters or symbols used in writings and inscriptions, particularly by the Egyptians, as signs of sacred, divine, or supernatural things. The hieroglyphics were figures of animals, parts of the human body, &c., containing a meaning which was intelligible only to the priests, and those who were initiated in their mysteries. In a general sense, a hieroglyphic is any symbol or figure which may serve to represent an object and convey a meaning.

HIEROGRAM'MATISTS, in antiquity, priests amongst the Egyptians who presided over learning and religion. Their duty was to take care of the hieroglyphics, and expound religious mysteries and opinions. They were also skilled in divination, and were honoured with many exemptions from civil duties and taxes.

HIEROM'ANCY, in Grecian antiquity, a species of divination, which predicted future events by observing the appearances of the various things offered in sacrifice.

HIEROM'NEMON, in ancient Greece, a magistrate who presided over the sacred rites and solemnities.

HIERON'ICES, in antiquity, a conqueror at the Olympic, Pythian, Isthmian, and Nemean games.

HIEROPHAN'TES, in Grecian antiquity, the priests and priestesses who were appointed by the state to have the supervisal of sacred rites, and to take care of the sacrifices.

HIEROPH'YLAX, an officer in the Greek church, who was guardian or keeper of the holy utensils, vestments, &c. answering to our sacristan or vestry-keeper.

HI'GHNESS, a title of honour given to princes. The kings of England before James I. were not saluted with the title of "majesty," but that of highness only. At present the children of crowned heads are generally styled *royal highness*. Those of the emperors of Austria and Russia are styled *imperial highness*.

HIGH-PRIEST, the head of the Jewish

THE HERRING WAS UNKNOWN TO THE ANCIENTS, BEING RARELY, IF EVER, FOUND IN THE MEDITERRANEAN.

HEXAMETER VERSE IS SUSCEPTIBLE OF GREAT VARIETY, AND IS DISTINGUISHED BY ITS FLOWING HARMONY AND ITS NUMEROUS PAUSES.

priesthood. Moses conferred this dignity upon his brother, in whose family it descended without interruption. After the subjugation of the Jews by the Seleucidæ, the Ptolemies, and the Romans, it was often arbitrarily conferred by the foreign masters. The importance of this officer is indicated by the splendour and costliness of his garment, which was among the most beautiful works of ancient art.

HILA'RIA, in antiquity, a festival celebrated by the Romans on the 8th of the calends of April, in honour of the god Pan.

HI'LUM, in botany, the eye; an external mark of the umbilical chord, where it adheres to the pericarp, as in the bean, the pea, &c.

HINDOOS', the primitive inhabitants of the East Indies; a people distinguished for their humanity, gentleness, industry, and knowledge of the polite arts, at a time when most of their Asiatic neighbours were yet only in the first stages of civilization, when the Greeks lay in obscurity, and the nations of Europe were in a state of barbarism. They have preserved their national character from the most distant ages, even under the dominion of foreigners, and have retained to the present day their language, their written characters, their government, religion, manners, customs, and habits of life. They possess great natural talents, but are at present deprived of opportunities for their development, though they are still largely engaged in manufactures and commerce. In earlier times, before they were oppressed by a foreign yoke, they had reached a higher degree of civilization, and their country has been considered as the cradle of the arts and sciences. They are divided into four distinct classes, or *castes*, which, to the great disadvantage of cultivation, are essentially and perpetually separate from each other, so that no transition from one to another is possible. But the most extraordinary custom of the Hindoos is the burning of widows at the funeral of their husbands. [See CASTE and SUTTEES.]

HIPPOCEN'TAUR, in ancient fable, a supposed monster, half man and half horse. The *hippocentaur* differed from the *centaur* in this, that the latter rode on an ox, and the former on a horse, as the name imports.

HIP'POCRAS, a medicinal drink, composed of wine with an infusion of spices and other ingredients; used as a cordial.

HIPPOC'RATES' SLEEVE, a kind of bag, made by uniting the opposite angles of a square piece of flannel, used for straining syrups and decoctions.

HIP'PODROME, in antiquity, a course for chariot and horse races. There are in England some vestiges of similar courses, the most remarkable of which is that near Stonehenge. This hippodrome occupies a tract of ground extending about two hundred druidical cubits, or three hundred and fifty feet, in breadth, and six thousand druidical cubits, or more than a mile and three quarters, in length. It runs directly east and west, and is completely inclosed with a bank of earth. The goal and career are at the east end. The goal is a high bank of earth, raised with a slope inwards, on which the judges are supposed to have sat. There is one about half a mile to the southward of Leicester; another near Dorchester; and a third on the banks of the Lowther, near Penrith in Cumberland. But these must have been humble imitations indeed of the splendid structures erected in ancient times, as may be seen in the description of the one at Olympias, as given by Pausanias, or of that which was finished by Constantine, and which still fills the traveller who visits the Turkish capital with astonishment. It is surrounded by two ranges of columns, extending farther than the eye can reach, raised one above the other, and resting on a broad foundation, and is adorned by an immense quantity of statues, in marble, porphyry, and bronze.

HIPPOPOT'AMUS, a monstrous quadruped, equal to the rhinoceros in size and strength, being from 12 to 20 feet long, supposed to be the *behemoth* of Job, and called the river-horse; the head very large, the body fat, and the legs short and thick, the teeth large, and with tusks harder and whiter than those of the elephant. It lives chiefly in water, and walks at the bottom, raising its head occasionally for respiration. It feeds on grain and vegetables, and unless attacked, or ill used, is perfectly harmless; but its skin, for the most part, resists a bullet. It has been chiefly discovered on the banks of the rivers Nile, Niger, Gambia, and Zaire. It is sometimes seen in salt water. In Guinea, the rivers, lakes, and marshy grounds afford numbers of them, and in some parts of Caffraria they are still more common. Their flesh is highly esteemed by the Hottentots and many other nations.

HIPPU'RIS, in botany, a genus of plants, class 1 *Monandria*, order 1 *Monogynia*. The species are perennials. The HIPPURIS is also the *Equisetum sylvaticum* of Linnæus.

HIPS, in botany, the ripe fruit of the dog-rose, which is principally made into a sweetmeat.

HIRU'DO, in entomology, the Leech, a well known insect, with a flatted but not jointed body, broader at the end than elsewhere, and the skin soft and glossy. The principal species are the Medicinal Leech and the Horse Leech.

HIRUN'DO, in ornithology, a genus of birds, of the order *Passeres;* comprehending the common house-swallow, the field swallow, the martin, and the goat-sucker. It is wonderful to observe with what degrees of architectural skill, Providence has endued birds of the same genus, and nearly correspondent in their modes of life. While the swallow and the house martin discover the greatest address in raising, and securely fixing, crusts of loam, of which their nests are formed, the bank-martin makes his hole in the sand, which is serpentine, horizontal, and two feet deep.——The nests of the *Hirundo esculenta*, or esculent swallow, are

reckoned a most exquisite delicacy among the Chinese, who make them into soups and use them in their most delicate dishes. ——*Hirundo*, the *Swallow-fish* or *Tub-fish*, in ichthyology, a species of *trigla*, with a somewhat prickly head, and with a remarkable pinnule at the pectoral fins: which are so long, as to be of use in flying, or raising itself above the water. Hence, by some inaccurate writers, it has been confounded with the exocœtus, or flying-fish.

HIS'TORY, in its general sense, consists of all that kind of knowledge which belongs to narrative; and stands opposed to science, which is demonstrated knowledge; and to philosophy, which is matter of opinion. History, then, denotes narration and description of every kind; but, as pre-eminent, the narrative of human affairs is styled *history* absolutely, while narratives or descriptions of other objects, are distinguished by specific additions. He that writes the history of his own times, is not only in danger of being partial, but of unacquaintance with many things, which time tardily brings to light; and he that writes the history of a former period, is dependent on the *dicta* of others. It has been well and truly said, that if truth is the historian's greatest object, justice is his first duty. He must have the rare power of renouncing his private feelings, and, whilst he investigates or writes as an historian, he must elevate himself above his country, sect, and age, so as not only to be willing to acknowledge the faults of his own party, and the merits of his adversaries, but, what is far more difficult, he must divest himself of the peculiar views of his age, or country, or sect, and be able to enter into those of others, and not measure them by his own standard. Among the numerous causes of historical falsehood, of which it would be useful to take the most scrutinizing view, there is one which appears eminently deserving of remark; and this is, the extraordinary care that, in public as well as private life, must frequently be employed, by those who know it best, to prevent the publication of the truth.—The uses of history are as varied as they are important. To become acquainted with the characters of men, the marks, sources, and effects of their passions and prejudices, the power and changes of their customs, and the like, is an essential and necessary step to prudence; and all this knowledge is considerably improved by history, which teaches us to make other men's experience our own, to profit by it, and to learn wisdom from their misfortunes. Persons who read history merely for amusement, or, having in view some particular branch of learning, attend only to certain branches of history, are not confined to that order and connection which is absolutely requisite for obtaining a proper knowledge of history; the most regular, as well as successful way of studying which, is to begin with an epitome of universal history, and afterwards apply to the history of particular nations and commonwealths: for the study of particular histories is only extending the knowledge of particular parts of universal history. Unless this be our plan, we shall only fill the memory with some events; which may be done without applying to history, or pretending to the knowledge of it.

HIS'TORY PIECE, in painting, a representation of any remarkable event, which exhibits the actors, their actions, and the attending events to the eye, by figures drawn to the life. This species of painting is called *historical* painting.

HISTRION'IC ART, that of acting in dramatic representation. *Histrio*, in ancient Rome, signified an actor or comedian; but more especially a pantomimist, whose talents were exerted in gesticulations and dancing.

HITCH, among seamen, a sort of knot or noose for fastening a rope to any thing. Hitches are distinguished by the names of a *half-hitch*, a *clove-hitch*, a *rolling-hitch*, &c., according to the nature of the knot.

HOAR-FROST, the white particles of ice formed by the congelation of dew or watery vapours.

HOAR'HOUND, in botany, the name of several plants of different genera. The common hoarhound is the *marrubium vulgare*. It has a bitter taste, and is used as an attenuant.

HOCK'DAY, or HOKE'DAY, a day of feasting and mirth, formerly held in England the second Tuesday after Easter, to commemorate the destruction of the Danes in the time of Ethelred.

HOG, (*sus*) in zoology, a well-known and valuable quadruped. His form is inelegant, his motions uncouth and unwieldy, his appearance slothful and stupid, and his whole life a succession of torpor and gluttony. But, with these and many other repugnant qualities, he is of incalculable benefit to mankind. His flesh is pleasant, substantial, and nutritious, particularly to persons employed in hard labour; and as pork takes salt better than almost any other meat, it forms an important article in naval provisions. The domesticated varieties of the hog are exceedingly numerous: the generic characters are, four or six incisors in the upper jaw, converging; six in the lower jaw, projecting; two canines in the upper and two in the lower jaw, very long; fourteen molars in each jaw; the snout prominent, truncate, and containing a peculiar bone; feet, cloven. In their taste, hogs discover a strange degree of caprice; for whilst they are singularly delicate in their choice of herbs, they will devour with voracity the most nauseous and putrid carrion.——The Wild Boar, from which most of our domestic varieties are derived, is found in most parts of Europe and Asia, and is by no means so filthy or stupid an animal as the tame hog. His snout is longer, his ears shorter; he roots up the ground in a different manner, ploughing it up in furrows; his tusks are larger, some of them being ten inches in length, bent circularly, and exceedingly

sharp at the points. For the first three years of his life he follows the sow, the whole litter living in a herd together; but when he has attained his full size and strength, he ranges the forest alone, dreading no single creature, not even man himself. Hunting this animal has always been a favourite amusement. When he is roused, he goes slowly and uniformly forward, frequently stopping and facing his pursuers, often inflicting severe and mortal wounds. He is at last dispatched by the hunters, either with fire-arms or spears.

HOGS'HEAD, a measure of capacity, containing 52½ imperial gallons. It is equal to half a pipe.

HOLD, in ships, the whole interior or cavity in the belly of a vessel, which is either the *after-hold*, the *fore-hold*, or the *main-hold*, according to its situation.

HOLERA'CEÆ, the twelfth Linnæan order of plants, containing trees, shrubs, perennial and annual herbs, as rhubarb, beet, &c.

HO'LINESS, a title of quality given to the pope, who is styled, "your holiness," or, "holy father:" in Latin, *sanctissime*, or *beatissime pater*.

HOL'LY, in botany, a beautiful evergreen tree, of the genus *Ilex*, of several species. The common holly grows from 20 to 30 feet high; the stem by age becomes large, and is covered with a grayish smooth bark, and set with branches which form a sort of cone. The leaves are of a bright green on the upper surface, but pale beneath; the edges indented and waved, with sharp prickles at the points. The flowers grow in clusters, and are succeeded by roundish berries, which turn to a bright red about Michaelmas. The timber of holly is the whitest of all hard wood, and therefore used by inlayers: it is also used by millwrights, turners, &c. Its name is a supposed corruption from *holy*, as Dr. Turner, our earliest writer on plants, calls it holy and holy-tree; which appellation was given it, most probably, from its being used in holy places. It has a great variety of names in Germany; amongst which is *Christdorn;* in Danish it is also called *Christhorn;* and in Swedish *Christtorn*, amongst other appellations: from whence it appears that it is considered a holy plant by certain classes in those countries.——*Knee-holly*, a plant, the butcher's broom, of the genus *Ruscus*.——*Sea-holly*, a plant, of the genus *Eryngium*.

HOL'LYHOCK, in botany, the *Althea rosa*, a hardy flowering plant, a native of the East, and very frequently cultivated in our gardens. The root is biennial, and shoots up one or several very upright hairy stems, from five to eight feet in height, bearing large and beautiful flowers.

HOL'OCAUST, a burnt offering or sacrifice, wholly consumed by fire: of this kind was the daily sacrifice in the Jewish church. This was done by way of acknowledgment, that the person offering, and all that belonged to him, were the effects of the divine bounty. The pagan nations, who also offered holocausts, probably considered them in the same light.

HOL'OGRAPH, a deed or testament wholly written by the hand of the testator.

HOLOM'ETER, an instrument for taking all kinds of measures, both on the earth and in the heavens.

HOLY ALLI'ANCE. A religious feeling had long prevailed among the nations of the continent, that their preceding sufferings, arising from the horrors of war and invasion, were the direct consequences of the French revolution, which they looked upon as a punishment inflicted upon the world for its impiety. After the fall of Napoleon, this religious feeling still remained strong in their minds, and they were induced to believe, that religion might be made the basis of international politics. Participating in this spirit, and being desirous to become the pacificator of Europe, the emperor Alexander of Russia applied to the emperor of Austria and the king of Prussia to join him in establishing an alliance for the promotion of this glorious object. To his request these monarchs readily acceded. The document which Alexander had drawn up, and sent to them in his own hand-writing, consisted in a declaration, that, in accordance with the precepts of the gospel of Jesus Christ, the principles of justice, charity, and peace should be the basis of their internal administration, and of their international relations, and that the happiness and religious welfare of their subjects should be their great object. It was also stipulated that the three sovereigns should invite others to become members of the Holy Alliance; and, in the sequel, all the European sovereigns, except the pope, became members of it. Never, perhaps, was a royal league so extravagantly lauded, or so furiously denounced. Its panegyrists looked forward to the permanent repose of nations, and the establishment of rational freedom, in lieu of anarchy, violence, and bloodshed; while its opponents watched its progress with mistrust and jealousy, believing that the union of crowned heads could tend to nothing short of universal despotism. It is not our province in this place to detail the events which subsequently took place: they belong to the history of nations. But we may observe, that as the views of the Holy Alliance became more developed, Great Britain thought proper to secede from it; and many circumstances have since proved, that this union of crowned heads has not only failed to secure the important benefits which it promised for the people, but that the monarchs themselves have been compelled to abandon some of their own extravagant pretensions to legitimate stability.

HO'LY-ROOD DAY, a festival observed by Roman Catholics in memory of the exaltation of our Saviour's cross.

HO'LY-THURS'DAY, the day on which the ascension of our Saviour is commemorated, ten days before Whitsuntide.

HO'LY-WATER, in the Roman Catholic

THE ANCIENT PALACE OF HOLYROOD, EDINBURGH, IS A LARGE QUADRANGULAR BUILDING OF HEWN STONE; BUT IS NOW ENTIRELY IN RUINS.

THERE ARE STILL EXTANT SEVERAL FINE HOMILIES, COMPOSED BY THE ANCIENT FATHERS, PARTICULARLY ST. CHRYSOSTOM AND ST. GREGORY.

and Greek churches, water which has been consecrated by prayers, exorcisms, and other ceremonies, to sprinkle the faithful and things used for the church. It is contained in a particular kind of vases, at the doors of churches, and also within them at certain places, from which the Catholics sprinkle themselves before prayer. The Protestants renounce the use of holy-water, probably from a fear that it would be considered, like amulets or relics, as something efficacious in itself, without the repentance commanded by the church.

HO'LY-WEEK, the week before Easter, in which the passion of our Saviour is commemorated.

HOM'AGE, in law, the oath of submission and loyalty, which the tenant, under the feudal system, used to take to his lord when first admitted to his land.

HOMER'IC, pertaining to Homer, the great poet of Greece, or to his poetry.

HOM'ICIDE, in law, the killing of one human being by another. It is of three kinds, *justifiable*, *excusable*, or *felonious*; *justifiable*, when it proceeds from unavoidable necessity, without an intention to kill, and without negligence; *excusable*, when it happens from misadventure, or in self-defence; *felonious*, when it proceeds from malice, or is done in the prosecution of some unlawful act, or in a sudden passion. Homicide committed with pre-meditated malice, is *murder*. Suicide also, or self-murder, is felonious homicide.——The lines of distinction between felonious and excusable or justifiable homicide, and between manslaughter and murder, are, in many cases, difficult to define with precision. But, in general, the accused has the advantage of any uncertainty or obscurity that may hang over his case, since the presumptions of law are usually in his favour.

HOM'ILY, a sermon or discourse upon some point of religion, delivered in a plain manner, so as to be easily understood by the common people. In the primitive church, homily rather meant a conference or conversation by way of question and answer, which made part of the office of a bishop, till the fifth century, when the learned priests were allowed to preach, catechize, &c. in the same manner as the bishops used to do. There are still extant several fine homilies, composed by the ancient fathers.——*Homiletic or pastoral theology*, a branch of practical theology, which teaches the manner in which ministers of the gospel should adapt their discourses to the capacities of their hearers, and pursue the best methods of instructing them by their doctrines and examples.

HOMŒ'OPATHY, a paradoxical, if not empirical, invention of a German physician, named Hahnemann, first promulgated in 1824; by which he, and the Homœopathists who subscribe to his doctrine, profess to cure diseases by such remedies as would cause similar diseases in healthy persons. The fundamental principle of this system is, therefore, *similia similibus curantur*. In the conviction that every disease carries with it a great susceptibility for the proper medicine, and that the power of medicine increases by minute division, the homœopathist gives but one drug at a time, and does not administer another dose, or a new medicine, until the former has taken effect.

HOMOGE'NEOUS, or HOMOGE'NEAL, an appellation given to things, the elements of which are of similar nature and properties.——*Homogeneous light*, that whereof the rays are all of one colour and degree of refrangibility, without any mixture of others.——*Homogeneous surds*, in mathematics, those which have the same radical character or signs.

HOMOL'OGOUS, in geometry, an appellation given to the corresponding sides and angles of similar figures, as being proportional to each other.

HON'EY, a saccharine substance, collected by bees from the flowers of various plants, and deposited in their comb. The honey is extracted either by expression, or by placing the comb in a warm situation, when it liquifies and comes away in a pure state. The best honey is of a thick consistence and a whitish colour, inclining to yellow, and of an agreeable smell and taste: but both the colour and flavour are said to differ, according to the plants from which it has been collected. Honey appears to consist of vegetable juices, either oozing with a portion of their essential oil from flowers, or previously collected from the leaves and branches of trees by vine-fretters, and then known by the name of honey-dew. These juices the bees transport by means of their proboscides, and, after giving them a certain preparation, probably in their stomachs, deposit them in their cells. That the juices do undergo some preparation, appears almost undeniable, since the honey wrought by young bees is white, and more pure than that produced by old. The former is called *virgin honey*. It is a softening and slightly aperient remedy: mixed with vinegar it forms *oxymel*, and is used in various forms in medicine and pharmacy. It is particularly recommended to the asthmatic, and those subject to the gravel, from its detergent nature. It is well worthy of observation, that bees frequent many plants and flowers which have poisonous juices; and it is supposed, by a peculiar power of analysis, they extract that portion of the fluid only which is not deleterious, and consequently reject that which would be fatal to life. Dr. Barton, in the American Philosophical Transactions, states, that the bees partake of these poisonous syrups without injury. He enumerates among the plants which contain them, dwarf laurel, great laurel, kalmia, latifolia, broad-leaved moor-wort, Pennsylvania mountain laurel, wild honeysuckle, and the stramonium.

HON'EY-COMB, a waxen substance, of a firm, close texture, formed by bees into hexagonal cells, to deposit their honey and eggs in. These cells are constructed with geometrical accuracy, and arranged in two

layers, placed end to end, the openings of the different layers being in opposite directions. The comb is placed vertically; the cells, therefore, are horizontal. The distance of the different cakes of comb from each other is sufficient for two bees to pass readily between them, and they are here and there pierced with passages affording a communication between all parts of the hive. The sides of the cells are all much thinner than the finest paper; and yet they are so strengthened by their arrangement, that they are able to resist all the motions of the bee within them. In fact, the construction of the cells is such as to afford the greatest possible number in a given space, with the least possible expenditure of material.

HON'EY-DEW, a sort of saccharine substance, found early in the morning on plants, flowers, &c. There are two kinds of honey-dew, the one produced by transpiration, during a sultry heat, from the leaves of particular kinds of trees: the other is the excrement of a small insect known by the name of *puceron*, or *vine fretter*.

HON'EY LOCUST, in botany, a lofty and beautiful tree, of the genus *Gleditsia*, growing in the vicinity of the Alleghany mountains. The leaves are pinnated, divided into numerous small leaflets, which give a light and very elegant appearance to the foliage; and its large brown seeds are contained in a pod, the pulp of which is extremely sweet. The tree is especially remarkable for its formidable branching thorns, which frequently grow to the length of several inches.

HON'EY-STONE, a mineral of a yellowish or reddish colour, crystalizing in octahedrons with a square base. It is harder than gypsum, very brittle, and burns at the flame of the blow-pipe. The honey-stone, like amber, belongs to the geological formation of lignites.

HON'EYSUCKLE, or WOOD'BINE, in botany, a genus of plants, the *Lonicera*, of many species. Honeysuckles are cultivated for the beauty and delightful fragrance of their flowers; and there is not a plant among the numerous exotics which grace our conservatories, that excels this hardy and familiar shrub.

HONG, the Chinese name for an European factory. *The Hong merchants*, of whom there are about a dozen, reside at Canton, and are responsible for the conduct of the Europeans, with whom they deal.

HON'OUR, a testimony of esteem or submission, expressed by words, actions, and an exterior behaviour by which we make known the veneration and respect we entertain for any one, on account of his dignity or merit. The word *honour* is also used in general for the esteem due to virtue, glory, and reputation. It moreover means, that dignified respect for character, which springs from principle or moral rectitude, and which is a distinguishing trait in the character of good men. It is also used for virtue and probity themselves, and for an exactness in performing whatever we have promised: and in this last sense we use the term, *a man of honour*. But honour is more particularly applied to two different kinds of virtue, bravery in men, and chastity in women. Virtue and honour were deified among the Greeks and Romans, and had a joint temple consecrated to them at Rome; but afterwards they had separate temples, which were so placed, that no one could enter the temple of Honour, without passing through that of Virtue; by which the Romans were continually put in mind, that virtue is the only direct path to true glory.——*Honour*, in law, a superior seignory, to which other lordships and manors owe suit and service, and which, itself, holds of the king only.——*Honours of War*, honourable terms granted to a vanquished enemy, when he is permitted to march out of a town with all the insignia of military honours.——*Laws of Honour*, among persons of fashion, signify certain rules by which their social intercourse is regulated, and which are founded on a regard to reputation. These laws require a punctilious attention to decorum in external deportment, but often lead to the most flagrant violations of moral duty.——*Court of honour*, an ancient court of civil and criminal jurisdiction, having power to redress injuries of honour, and to hold pleas respecting matters of arms and deeds of war.

HON'OURABLE, a title of quality attributed to the younger children of earls, and the children of viscounts and barons; to persons enjoying places of trust and honour; and, collectively, to the house of commons, and to the East-India company. Also, an epithet of respect or distinction; as, "the honourable gentleman."

HOOP'ING-COUGH, a disease marked by a convulsive, strangulating cough, in which the patient whoops, with a deep inspiration of breath. Children are most commonly the subjects of this disease, and it seems to depend on a specific contagion, which affects them but once in their life.

HOOP'OE, in ornithology, a beautiful crested bird, seldom seen in England, but common in Gibraltar, where it is called the Marsh-cock.

HOP, in botany, the *Humulus lupulus*, a climbing plant, which is of great importance in brewing, as it tends to preserve malt liquors, and renders them more aperient, diuretic, and salubrious. The root is perennial, giving out several herbaceous, rough, twining stems; the fruit is a sort of cone, composed of membraneous scales, each of which envelopes a single seed. These cones are the object for which it is so extensively cultivated, and their principal use is to communicate to beer its strengthening quality, to prevent it from turning sour, and to impart to it an agreeable aromatic bitter. Hops are said to have been introduced into England from the Netherlands in the sixteenth century; and their cultivation is especially attended to in the counties of Kent, Surrey, Sussex, Worcester, and Hereford. They are planted

in hills about eight or nine feet asunder. About the beginning of July hops begin to blow, and are ready to gather about the latter end of August; when, by their strong scent, their hardiness, and the brown colour of the seed, they may be known to be fit. The best method of drying hops is on a kiln over a charcoal fire; when the stalks are brittle, and the top leaves easily fall off, they are properly dried. When taken from the kiln, they should be laid to cool for three weeks or a month before they are bagged. The whole process, from the time of planting to the preparation for the purposes of commerce, requires much experience and many precautions. The crops even are excessively variable, often in a tenfold proportion in different seasons and situations. The excellence of hops is tested by the clammy feeling of the powder contained in the cones. The brighter the colour of the hops, the greater is the estimation in which they are held. One of the most active ingredients of the hop is a narcotic essential oil, and which gives the flower its peculiar smell: nay, its narcotic qualities were at one time so highly esteemed, that a pillow of hops was commonly recommended to procure sleep, when all other remedies had failed. The other properties of the hop are a yellow resin, and a bitter principle possessed of peculiar medicinal qualities, which chemists call *lupulin*.

HOP'LITÆ, in antiquity, heavy-armed soldiers among the Greeks, who were of the first and principal class.

HOP'PER, a kind of basket, in which seed-corn is carried at the time of sowing. Also, the wooden trough, in a mill, into which the corn is put to be ground.

HO'RARY CIRCLE *of a globe*, is fixed upon the brazen meridian divided into 24 hours, having an index moveable round the axis of the globe, which upon turning the globe 15 degrees, will shew what places have the sun an hour before or after us: and will also point out the hour of the day or night all over the world at any given moment.——*Horary motion of the earth*, the arch it describes in an hour, which is nearly 15 degrees. Hence in reducing motion into time, if 15° is equal to 1 hour, 1° is equal to 4′; therefore the clocks at places 15° East of London are an hour faster than those of London, and the clocks at places, 15° West of London, are one hour later than those of London.

HORDE, a company of wandering people, who have no settled habitation, but stroll about, dwelling under tents, to be ready to shift, as soon as the provisions of the place fail them.

HORI'ZON, in astronomy, the line that terminates the view, or that great circle which divides the heavens and the earth into two equal parts or hemispheres, distinguishing the upper from the lower. The horizon is either sensible or rational: the *sensible* horizon is that circle which limits our prospect. The *rational* horizon is a great circle of the apparent celestial sphere, dividing it into two equal hemispheres, and serving as the limits of the elevation or depression of celestial objects.—— *Artificial* or *painter's horizon*. In every picture the *artificial eye*, or *point of sight*, is supposed to be at a certain height from the base line; as high as a human figure would be, represented as standing there. To this point every thing in the picture tends, as every thing in a *real* view tends to the *natural* eye. The picture then, as far as this circumstance is concerned, is perfect, if the *artificial eye* and the *artificial horizon* go together; for these always bear the same relation to each other, wherever the picture may be placed.

HORN, in physiology, a hard, semi-transparent substance growing on the heads of several animals, and serving them as weapons of defence. The horn of an animal is of the same nature as its gelatinous matter; and is only that matter charged with a less quantity of water, and a larger one of earth, and sufficiently condensed to be of a solid consistence. It is mostly composed of albumen, gelatin, and phosphate of lime, but the horns of the buck and stag are of an intermediate nature between horn and bone. Horn is soft, tough, semi-transparent, and susceptible of being cut into a great variety of forms: these properties render it an article of considerable value in the hands of the turner and other manufacturers, for combs, snuff-boxes, knife handles, lanthorns, &c.

HORN'BILL, in ornithology, a fowl of the genus *Buceros*, which has a flat bony forehead, with two horns. It is a native of the East Indies.

HORN'BLENDE (called by Hauy *amphibole*), in mineralogy, a sort of slaty stone, of a green and blackish green colour, found in great abundance in many parts of Great Britain and elsewhere. It is very remarkable on account of the various forms and compositions of its crystals and crystaline particles, and of its exceedingly diversified colours, thus giving rise to almost numberless varieties, many of which have obtained distinct appellations.

HOR'NET, a large, strong, and stinging insect, of the genus *Vespa*, or wasp kind. This insect constructs a nest of leaves, &c., which it attaches to the branches of trees, and is often as large as a man's hat.

HORN-'ORE, in mineralogy, one of the species of silver ore.

HORN'PIPE, an animated sort of dance. Also, a musical instrument in Wales.

HORN'SILVER, a white or brownish mineral, insoluble in water, and though fusible at the blowpipe, with difficulty reducible by it. In Peru, Mexico, and other parts of South America, it is found abundantly mixed with veins of metallic silver.

HORN-'STONE, in mineralogy, a siliceous stone, a sub-species of quartz. Its geological locality is remarkable, for it occurs in both ancient and recent formations. The hornstone which occurs in secondary limestone is called *chert* by the English miners.

HORN'WORK, in fortification, an out-

AS THE FINE AROMA OF HOPS DOES NOT LAST A TWELVEMONTH, OLD HOPS BECOME OF COMPARATIVELY LITTLE VALUE.

IN MOST HORNED ANIMALS, THE HORNS ARE NOT ENTIRELY DEVELOPED UNTIL THEY HAVE NEARLY ARRIVED AT MATURITY.

work which advances towards the field, and is composed of two demi-bastions joined by a curtain.

HOROL'OGY, that branch of science which enables us to measure the portions of time as they pass. We judge of the lapse of time by the succession of sensible events, and the most convenient and accurate measures of its quantity are derived from motions, which are either uniform, or repeated at equal intervals. Of the *former* kind the rotation of the earth on its axis is the most exact, and the situation of the earth with respect to the fixed stars, or sun, constitutes the means for determining the parts of time as they follow each other. Of the *latter* kind the rotation of machinery consisting of wheel-work, moved by a weight or spring, and regulated by a pendulum or balance, affords instruments of which the utility is well known. The term horology is at present confined to the principles on which the art of making clocks and watches is established.

HOROM'ETRY, the art or practice of measuring time by hours and subordinate divisions.

HOROP'TER, in optics, a right line drawn through the point where the two optic axes meet, parallel to that which joins the two pupils.

HOR'OSCOPE, in astrology, the degree or point of the horizon rising above the eastern point of the horizon at any given time, when a prediction was to be made of a future event. Also a scheme or figure of the twelve houses, or twelve signs of the zodiac.

HORSE, in zoology, *Equus caballus*, a domestic quadruped, that excels all others in beauty and usefulness. He is characterized by having six erect and parallel fore-teeth in the upper jaw, and six somewhat prominent in the under jaw; the dog-teeth are solitary, and the feet consist of an undivided hoof. The most esteemed breeds of horses are, the Barbary or Arabian horses, remarkable for their fleetness; the English racehorse and hunter, which combine beauty with swiftness; and the English draught-horses, which are distinguished for their size and strength, &c. In Africa horses still maintain their original independence, and range at pleasure in herds of several hundreds, having always one or more as an advanced guard, to give an alarm against the approach of danger. The notice is expressed by a sudden snorting, at which the main body gallops off with the most surprizing swiftness. In Arabia almost every man possesses his horse, which lives in the same apartment with himself and family, and is considered as constituting an important part of it. It is fed with the most regular attention, is cleaned with an incessant assiduity, and is never, on any account, ill-treated. An Arab occasionally appears to carry on a conversational intercourse with his horse, and his attachment to the animal excites in return a corresponding affection. Bishop Heber says, his Arab horse had "almost as much attachment and as coaxing ways as a dog. This seems the general character of the Arab horse. It is not the fiery dashing animal I had supposed, but with more rationality about him, and more apparent confidence in him, than the majority of English horses." In no country of the globe, however, has the breed of horses been more attended to than in Great Britain; nor are they excelled in swiftness or beauty by the coursers of Barbary or Arabia; and in supporting fatigue is much superior to either. But by the absurd practice of running our race-horses at two or three years old, working others long before their limbs are knit, or their strength come, and cruelly exacting from them services far beyond their powers, their usefulness is soon destroyed, and their lives materially shortened.—The age of a horse under eight years old is mostly to be known by his teeth. The horse has twenty-four grinders; four tushes, or single teeth; and twelve front teeth, or gatherers. Mares in general have no tushes. The black marks, or cavities denoting the age, are to be found in the corner front teeth, adjoining the tushes. At four years and a half old, the mark teeth are just visible above the gum, and the cavity is distinctly to be seen. At five, the remaining colt's teeth are shed, and the tushes appear. At six, the tushes are up, and appear white, small, and sharp, with a small circle of flesh growing near them; the horse's mouth is then completed, the corner teeth being filled up. At eight, the black marks disappear. It is computed that there are a million and a half of horses employed, for various purposes of utility and pleasure, in Great Britain, which are probably worth twenty-two millions sterling. Cuvier says, "it may safely be asserted, that more horses are consumed in England, in every ten years, than in any other country in the world in ten times that period, except those which perish in war."

HORSE, in military affairs, a body of cavalry.——In the marine, a name for two different ropes in the vessel, namely, one extending from the middle of a yard to its arms; another extended perpendicularly near the mast.——*Horse*, in printing, the sloping bench standing on the *bank*, or table, on which the pressmen set the heaps of paper before each sheet is placed on that part of the press called the *tympan*.

HORSE POWER. A horse draws to the greatest advantage when the line of draught inclines a little upwards. Desaguliers and Smeaton consider the force of one horse equal to that of five men, but writers differ on this subject. The measure of a horse's power, as the standard of the power of machinery given by Mr. Watt, is, that he can raise a weight of 32,000 pounds to the height of one foot in a minute. His power of draught or carriage, of course, diminishes as his speed increases. The proportion of diminution, according to professor Leslie, is as follows: If we represent his force when moving at the rate of 2 miles an hour by

BY THE EXPRESSIVE MOTION OF A HORSE'S EARS, AN ATTENTIVE OBSERVER MAY TELL ALMOST ALL THE ANIMAL MEANS.

AS A HORSE GROWS OLD THE CONVEXITY OF HIS EYE IS LESSENED, WHICH RENDERS THE VISION IMPERFECT, AND CAUSES HIM TO SHY.

the number 100, his force at three miles per hour will be 81; at 4 miles, 64; at 5 miles, 49; and at 6 miles, 36.

HORSE-RACING, a diversion more used in England than in any other country in the world. Race-horses should be as light as possible, large, long, and well shaped, nervous, of high mettle, and good wind, with small legs, and neat small shaped feet. It is supposed that horse-racing was practised by the Anglo-Saxons, because when Hugh, the head of the house of the Capets, afterwards monarchs of France, solicited the hand of Edelswitha, the sister of Athelstan, he sent to that prince, among other valuable presents, several "running horses," with their saddles and their bridles, the latter embellished with bits of yellow gold. We have, however, certain information, that it was known in England in the reign of Henry II., and that it became a general and national amusement in the time of James I., when the first Arabian was purchased by the king for 500*l*. The most memorable instances of the fleetness of horses, are those of Eclipse and Childers; the former having run four miles in eight minutes, carrying 12 stone weight, and the latter, four miles in six minutes 48 seconds, carrying 9 stone 2 lbs. weight.——Horse-races were common amongst the Greeks and Romans; and the place where they ran or breathed their coursers, was called the Hippodrome, [which see.]

HORSESHOE, in smithery, a circular plate of iron fitted to the foot of a horse. This shoe is sometimes turned up in the winter season, to prevent the horse from slipping, which is called rough-shoeing.——*Horse-shoe*, in fortification, is a small work sometimes of a round and sometimes of an oval figure, inclosed with a parapet, sometimes raised in the moat or ditch, or in low grounds, and sometimes to cover a gate, or to serve as a lodgment for soldiers.

HORSE-TAIL, in botany, a plant of the genus *Equisetum*. There is another kind, called the shrubby horse-tail, which is of the genus *Ephedra*.

HORTICULTURE, the art of cultivating a garden, and rearing the finest kinds of plants. Within the last half century great improvements have been effected in all that relates to horticulture. That accomplished artist, Kent, led the way. According to lord Walpole, he was painter enough to taste the charms of landscape, sufficiently bold and opinionative to dare and to dictate, and born with a genius to strike out a great system from the twilight of imperfect essays. He leaped the fence, and saw that all nature was a garden. The great principles on which he worked were perspective, light, and shade. Groups of trees broke a too extensive lawn; evergreens and wood were opposed to the glare of the champaign, and, by selecting favourite objects, and veiling deformities, he realized the compositions of the great masters in painting. Men of taste and genius, not only in England, but on the continent, followed in his path; and British gardening became the designation for all that was beautiful in that pleasing art—the synonyme of perfection in rural culture. Only thirty years have elapsed since the London horticultural society was established, and there are now more than fifty similar institutions in Great Britain, which still maintains the first rank in the art; though France, with a laudable emulation, has made great efforts to rival her.—The natural divisions of horticulture are the esculent or kitchen garden, seminary, nursery, fruit trees and vines, flower garden, green-houses, *arboretum* of ornamental trees and shrubs, the botanical and medical gardening, and landscape or picturesque gardening. Each of these departments requires to be separately studied before it can be managed so as to combine utility and comfort with ornament and recreation. To accomplish this on a large scale, artists, scientific professors, and intelligent and experienced practical superintendants, are necessarily employed.

HORTUS SICCUS. [See Herbarium.]

HOSANNA, was a form of supplication amongst the Hebrews, signifying *save, I beseech you*, or *help him God!* This acclamation was so much used at the feast of tabernacles, that the solemnity was called *Hosanna rabba*. It was used at the inauguration of Kings to express their good wishes for the prosperity of their princes. At the feast of tabernacles it was continually echoed, both as expressive of gratitude for former deliverances, and of their joyful expectation of a future one by the Messiah.

HOSE, among mariners, a leathern pipe for conveying water from the main decks into the casks. Also, a leathern pipe, used with fire-engines, for conveying water to extinguish fires.

HOSEA, a canonical book of the Old Testament, and the first of the minor prophets. His prophecies are chiefly directed to the ten tribes before their captivity, threatening them with destruction in case of disobedience, but comforting the pious with the promise of the Messiah, and of the happy state of the church in the latter days.

HOSIERY, stockings, and other goods in a shop that are spun and wove.

HOSPITAL, a place or building properly endowed, or otherwise supported by charitable contributions, for the reception and support of the poor, aged, infirm, sick, or helpless. Also, a house for the reception of disabled seamen or soldiers, foundlings, &c., who are supported by public or private charity, as well as for pauper lunatics, infected persons, &c.—Hospitals for the sick and wounded, and also those for the poor and infirm were wholly unknown among the ancients. In Sparta, where all the citizens ate together, there was no institution for the sick. In Rome, neither under the consuls nor emperors did they ever think of making any provision for the infirm or the poor. The first establishment of hospitals must be ascribed to Christians. After the establishment of Christianity, the emperors

IN RIDING, THE HANDS AND LEGS OF THE RIDER OUGHT TO ACT IN CORRESPONDENCE WITH EACH OTHER IN EVERYTHING.

A HORSE SHOULD BE TAUGHT TO LEAP BY DEGREES, BEGINNING WITH LOW AND SMALL LEAPS, AND AUGMENTING THEM GRADUALLY.

at Constantinople built many hospitals for poor infants, the aged, orphans, and strangers. Piety impelled many individuals to appropriate a part of their funds to religious and charitable purposes; and this good example being followed, from patriotic and benevolent motives, hospitals of various kinds were founded in most of the civilized nations of Europe.—The great advantages arising to the public from well regulated hospitals can be easily understood and appreciated. To the forlorn and destitute poor they are a blessed retreat in the hour of calamity and need; while they afford an admirable opportunity for the improvement and acquisition of surgical and medical advice. And it is with sincere pleasure we are enabled to add, that the tide of public charity, continually augmenting, flows in numerous health-restoring channels, not only in the metropolis, but throughout the entire kingdom.

HOS'PITALLERS, an order of religious knights, who built a hospital at Jerusalem for pilgrims. They are now known by the title of knights of Malta.

HOSPI"TIUM, a term used in old writers either for an inn or a monastery, built for the reception of strangers and travellers. In the more early ages of the world, before public inns were thought of, persons who travelled lodged in private houses, and were obliged, if need required, to return the favour to those that entertained them. This was the occasion of the most intimate friendship betwixt the parties, insomuch that they treated one another as relations. Hence the word *hospitium*, which properly signifies lodging or entertainment at the house of another, is used for friendship, founded upon the basis of hospitality.

HOS'PODAR, a title borne by the princes of Wallachia and Moldavia, who receive the investiture of their principalities from the grand seignior. He gives them a vest and standard: they are under his protection, and obliged to serve him, and he even sometimes deposes them; but in other respects they are absolute sovereigns within their own dominions.

HOST, in church history, a contraction of *hostia* a Latin word, signifying a victim, or sacrifice offered to the Deity. In a general sense, the term is used to Jesus Christ, as an *hostitia* offered to the Father for the sins of mankind.—In the church of Rome, the *host* is the consecrated wafer used in the sacrament of the Eucharist; which wafer, or bread, being transubstantiated, as is taught, into the real body and blood of Christ, is in that rite offered up a sacrifice anew.

HOSTAGE, a person given up to an enemy as a security for the performance of the articles of a treaty; on the performance of which the person is to be released.

HOT'HOUSE, a building, constructed in a garden, for the rearing of exotics and tender plants that require heat, as well as for the early ripening of fruit.——*Hotbed*, a bed of earth with horse-dung, or other manure, covered with glass; intended to raise early plants or nourish such as will not thrive in cool air.

HOTTE, a basket of wicker work, much used in France, for carrying burthens on the back. It is slung over the arms by means of straps, and great weights are thus carried with much facility.

HOTTENTOTS, natives of the southern extremity of Africa; a race of people whose appearance, habits, and general ignorance, show in the most striking manner to what a degraded condition mankind may be reduced, when wholly destitute of the blessings of civilization.

HOUND, a dog used in the chase, with long, smooth, pendulous ears. The bloodhound appears to have been the origin of the other sub-varieties, the principal of which are the foxhound, harrier, and beagle. England excels all other countries in her breed of hounds, not only from the climate being congenial to them, but also from the great attention paid to their breeding and management.

HOUR, a space of time equal to one twenty-fourth part of a day and night, and consisting of 60 minutes, each minute being 60 seconds.—The ancient *Hebrews* did not divide their day into hours. Their division of the day was into four parts, morning, high day or noon, the first evening, and the last evening; and their night was divided into three parts, night, midnight, and the morning watch. But afterwards they adopted the manner of the *Greeks* and *Romans*, who divided the day, *i. e.* the space of time from sun rising till sun-set, into twelve equal parts, which consequently differed in length, at the different seasons of the year, though still equal to each other. [See DAY.]

HOUR'GLASS, a chronometer or instrument that measures time by the running of sand from one part of a glass to another, through a small aperture.

HOU'RIS, virgins in Mohammed's paradise, who, according to the description of them in the Koran, surpass in voluptuous beauty all that the imagination of mortals can conceive. They are accordingly destined to be one of the rewards of the blest.

HOUSE, in its primary sense, signifies any building or edifice designed or appropriated for the habitation of man.——*House*, among genealogists, a noble family, or an illustrious race, descended from the same stock; as the house of Austria; the house of Hanover.——When speaking of a body of men united in their legislative capacity, and holding their place by right or by election, we also use the word *house*; as the house of lords or the house of commons.——*House*, in astrology, the twelfth part of the heavens. The division of the heavens into houses, is founded upon the pretended influence of the stars, when meeting in them, in all sublunary bodies. These influences are supposed to be good or bad, and to each of these houses particular virtues are assigned, on which astrologers prepare and form a judgment of their horoscopes. The horizon and meridian are

two circles of the celestial houses, which divide the heavens into four equal parts, each containing three houses; six of which are above the horizon, and six below it: and six of these are called eastern, and six western houses.

HOU'SE-BREAKING, in law, the breaking open and entering of a house by daylight, with the intent to commit a felony. The same crime committed at night is denominated a *burglary*.

HOU'SEHOLD, the whole of a family considered collectively, including the mistress, children, and servants. But the household of a sovereign prince includes only the officers and domestics belonging to his palace.

HOU'SELEEK, in botany, *Sempervivum tectorum*, a plant with a perennial root, that grows on the roofs of houses or the tops of walls.

HOWITZER, a kind of mortar, mounted upon a carriage like a gun. The howitzer is used to throw grenades, case-shot, and sometimes fire-balls: their principal use, however, is in the discharge of grenades.

HOY, a small vessel for carrying passengers from one place to another.

HUE AND CRY, in law, the common law process of pursuing a felon. The original signification of the phrase evidently was, that the offender should be pursued with a loud outcry, in order that all might hear and be induced to join in the pursuit.

HUER, a name given to certain fountains in Iceland of a most extraordinary nature, forming at times *jets d'eau* of scalding water of ninety feet in height and thirty in diameter, creating one of the most magnificent sights that can be conceived. The playing of these stupendous spouts is foretold by noises roaring like the cataract of Niagara. The largest is called Geyser; it is situated in a plain rising into small hills, in the midst of an amphitheatre bounded by the most magnificent and various shaped icy mountains, among which Hecla soars pre-eminent. Huers are not confined to the land; but sometimes rise in the sea, and form scalding waters amidst the waves.

HU'GUENOT, a French word used after the year 1560, as an appellation for a Protestant. Its origin, and consequently its *literal* meaning, has received various explanations. Their history forms an important feature in the annals of persecution; but a detail of the sanguinary scenes would be altogether incompatible with the plan of this volume; we shall therefore merely remark that the religious prejudices of the people were kept alive by contending political factions, till France was nearly desolated by what was termed "religious wars;" and at length a dreadful massacre of the Huguenots took place on St. Bartholomew's day, 1572. Henry IV., 1598, protected them by the edict of Nantes; but Louis XIV., 1685, revoked this edict, in consequence of which 500,000 Huguenots fled to Switzerland, Germany, Holland, and England, where their industry and wealth found a welcome reception.

HUISSIERS, civil officers in France, whose attendance is necessary at every judicial tribunal, from that of a justice of the peace to the court of cassation. There are different degrees of them, answering in some respects to the sheriffs, clerks, and criers of our courts.

HULK, in naval architecture, the body of a vessel, or that part which is, in truth, the vessel itself; the masts, sails, and cordage, composing only the apparatus for its navigation. *Hulk* is also an old ship; so called because such ship being no longer intended for navigation, the masts are taken away. Such old vessels are employed in the business of raising sand or ballast; and the criminals that are condemned to this work in the way of punishment, are said to be condemned *to the hulks*.

HUMANITIES, a term used in schools and colleges, to signify polite literature, or grammar, rhetoric, and poetry, including the study of the ancient classics, in distinction from philosophy and science.

HUM'BLE-BEE, in entomology, the *Apis terrestris*; a large hairy black bee, whose thorax is encircled with a yellow belt. It forms its nest deep in the earth, and hovers about the flowers with a buzzing noise.

HUMECTA'TION, in pharmacy, the moistening, or preparing medicines by steeping them in water.

HU'MERUS, in anatomy, the upper part of the arm, between the scapula and elbow. The *os humeri* or *brachii*, as it is called, is articulated at one end with the scapula, and at the other to the ulna and radius. As to the motion of the *os humeri*, it is evidently the most free and extensive of that of any bone in the human body; being furnished with several flexor and extensor muscles.

HU'MITE, a mineral deriving its name from Sir Abraham Hume. It is of a reddish colour and a shining lustre, crystalized in octahedrons.

HUM'MING-BIRD, a beautiful tropical bird, of the genus *Trochilus*, the smallest species of which is scarcely an inch in length. Its chief food is the nectar of flowers, which it extracts like the bee, and it suspends its nest from an orange or citron tree, laying two white eggs, the size of a pea. From the great beauty of this bird many attempts have been made to domesticate them, but unsuccessfully, as they are exceedingly susceptible of cold, and droop and die when deprived of the animating influence of the sun's rays.

HUM'MOCK, a name given by mariners to a hillock or small eminence of land, resembling a cone, and appearing on the seacoast of a country.

HU'MOUR, in medicine, a word much used to express the moisture or fluids of animal bodies, or a fluid in its morbid or vitiated state.——*Aqueous humour of the eye*, a transparent fluid occupying the space between the crystaline lens and the cornea, both before and behind the pupil.——*Crystaline humour* or *lens*, a small transparent solid body, occupying a middle position in the eye; being the principal instrument in

refracting the rays of light, so as to form an image on the retina.——*Vitreous humour*, a fluid contained in the minute cells of a transparent membrane, occupying the greater part of the cavity of the eye, and all the space between the crystaline and the retina.——*Humour*, when applied in a literary sense, signifies that quality of the imagination which creates ludicrous images or representations. *Humour* is less brilliant and poignant than wit; but though it may be employed to raise mirth and render conversation pleasant, it is also often made an agreeable vehicle for satire.

HU'MORAL, in medicine, an epithet for whatever relates to the humours or fluids of the system. The *humoral pathology* is that which attributes all morbid phenomena to the disordered condition of the fluids or humours. It is opposed to the *nervous pathology*, which refers everything to the nervous energy resident in the solids, and considers diseases as arising from irregularities in their functions.

HUN'DRED, a part or division of a county, which was anciently so called from its containing a hundred families, or from its furnishing a hundred able men for the king's wars. After king Alfred divided this kingdom into counties, and gave the government of each county to a sheriff, they were divided into hundreds, of which the constable was the chief officer. By various statutes, hundreds are liable to actions for injuries sustained by riots, robberies, malicious mischiefs, &c.

HUNTING, the act or diversion of pursuing wild animals. In a rude state of society, it is one of the most important employments of mankind; in its more advanced state, it becomes an agreeable amusement, and is practised in a great variety of ways, according to the country and the description of the game. In England, the fox, the stag, and the hare, are the principal objects of the chase; on the continent of Europe, the wild boar and the wolf are added to the list. Dionysius (who lived 50 B.C.) says, that the inhabitants of the northern part of this island tilled no ground, but lived in great part upon the food they procured by hunting. Strabo, who was nearly contemporary with him, also says, that the dogs bred in Britain were highly esteemed upon the continent, on account of their excellent qualities for hunting. As early as the ninth century, it formed an essential part of the education of a young nobleman. Alfred the Great was an expert and successful hunter before he was twelve years of age. Among the tributes imposed by Athelstan, upon a victory over Constantine, king of Wales, were, "hawks and sharp scented dogs, fit for hunting of wild beasts." Edward the Confessor "took the greatest delight to follow a pack of swift hounds in pursuit of game, and to cheer them with his voice." To the passion for hunting which animated the feudal kings and nobles of Europe, the huge tracts of land which were afforested bear fearful testimony; and the writers of the time give a strong picture of the sufferings of the oppressed commonalty, under the tyrannical privileges of sport which were claimed by their masters. In the reign of Edward II., hunting was reduced to a perfect science, and rules established for the practice; these were afterwards extended by the *master of the game* belonging to Henry IV., and drawn up for the use of his son, Henry, prince of Wales, in two tracts, which are extant. Edward III., according to Froissart, while at war with France, and resident there, had with him sixty couple of stag-hounds, and as many hare-hounds, and every day hunted or hawked. Gaston, earl of Foix, a foreign nobleman, contemporary with Edward, also kept 600 dogs in his castle for hunting. The bishops and abbots of the middle ages hunted with great state, and some of them were skilful sportsmen. One of these clericals, an archbishop of York, in 1321, carried a train of 200 persons, who were maintained at the expense of the abbeys on his road, and who hunted with a pack of hounds from parish to parish!

HUR'RICANE, a most violent storm of wind, generally accompanied with thunder and lightning, and distinguished from every other kind of tempest by the indescribable force of the wind and its sudden changes. Hurricanes are most common in the West Indies, the Isle of France, and the kingdoms of Siam and China. What are called hurricanes in the more northern latitudes, are nothing more than whirlwinds, occasioned by the meeting of opposite currents. But in the real hurricane, all the elements seem to have armed themselves for the destruction of human labours and of nature herself. The velocity of the wind exceeds that of a cannon ball; corn, vines, sugar-canes, forests, houses, every thing is swept away. The hurricane of the temperate zone moves with a velocity of about sixty feet in a second; those of the torrid zone, from 150 to 300 feet in the same time. They appear to have an electric origin, and begin in various ways; sometimes a little black cloud rolls down the mountains, and suddenly unfolds itself and covers the whole horizon; at others, the storm comes on in the shape of a fiery cloud, which suddenly appears in a calm and serene sky. "The ruin and desolation accompanying a hurricane," says Dr. Mosely, in his Treatise on Tropical Diseases, "cannot be described. Like fire, its resistless force consumes everything in its track, in the most terrible and rapid manner. It is generally preceded by an awful stillness of the elements, and a closeness and a mistiness in the atmosphere, which makes the sun look red, and the stars larger. But a dreadful reverse succeeding—the sky is suddenly overcast and wild—the sea rises at once from a profound calm into mountains—the wind rages and roars like the noise of cannon—the rain descends in deluges—a dismal obscurity envelopes the earth with darkness—the superior regions appear rent with lightning and thunder—the earth often does, and always seems to

tremble—terror and consternation distract all nature—birds are carried from the woods into the ocean; and those whose element is the sea seek for refuge on land—the frightened animals in the field assemble together, and are almost suffocated by the impetuosity of the wind in searching for shelter, which, when found, serves only for destruction—the roofs of houses are carried to vast distances from their walls, which are beaten to the ground, burying their inhabitants under them—large trees are torn up by the roots, and huge branches shivered off and driven through the air in every direction, with immense velocity—every tree and shrub that withstands the shock, is stript of its boughs and foliage—plants and grass are laid flat on the earth,—luxuriant spring is changed in a moment to dreary winter. This dreadful tragedy ended, when it happens in a town, the devastation is surveyed with accumulated horror: the harbour is covered with wrecks of boats and vessels; and the shore has not a vestige of its former state remaining. Mounds of rubbish and rafters in one place, heaps of earth and trunks of trees in another, deep gullies from torrents of water, and the dead and dying bodies of men, women, and children, half buried, and scattered about, where streets but a few hours before were, present the miserable survivors with a shocking conclusion of a spectacle to be followed by famine, and, when accompanied by an earthquake, by mortal diseases."

HUS'BAND, a man contracted or affianced to a woman by marriage. The word *husband* primarily meant a farmer or cultivator, and had no relation to marriage: now, however, although the term *husbandry* is retained, the word *husband* has grown obsolete in its original sense.—Of all private contracts, that between a husband and wife is most intimately blended with the social condition of a community, and gives rise to the most numerous and important relations, rights, and duties. The first and one of the most important rights resulting from this contract, is the control, in a greater or less degree, according to the laws of different countries, which it gives to the husband of the person of the wife; and this control the English law recognizes in a manner more despotic than that of most other nations.

HUS'BANDRY, the practical part of the science of agriculture, or the business of cultivating the earth and rearing animals. Husbandry is the proper term for that which is commonly called farming; and, accordingly, in law, a man of this profession is not to be styled a farmer, but a husbandman. It includes agriculture, breeding, grazing, dairying, and every other occupation by which riches may be drawn from the superficial products of the earth. For a long time past it has been progressively rising in estimation; and the present age beholds the descendants of feudal chieftains seeking honourable renown in that pursuit which was once abandoned to the meanest of their ancestors' vassals. Late improvements in agriculture consist in the lessening the quantity of labour, by means of implements, machines, and methodical arrangements; and the ascertaining the principles of vegetation, and the operation of manures. Likewise in rearing such animals as, from their conformation, contain the greatest proportion of meat within a given weight of carcass; and such as, from the economy of their organs, will acquire the greatest quantity of flesh within a given time, and from a given quantity of pasture. [See AGRICULTURE.]

HUSSARS', the name by which certain cavalry regiments are distinguished. It is a word of Hungarian origin, and was originally given to the cavalry of that country, raised in 1458, when Mathias I. ordered the prelates and nobles to assemble, with their cavalry, in his camp. Every twenty houses were obliged to furnish a man; and thus from the Hungarian words *husz* (twenty), and *ar* (pay, was formed the name *huszar* or *ussar*.

HUS'SITES, the disciples of John Huss, a Bohemian, and curate of the chapel of Bethlehem at Prague; who, about the year 1414, embraced and defended the opinion of Wickliff of England, for which he was cited before the council of Constance, and, refusing to renounce his supposed errors, he was condemned to be burnt alive, which sentence was accordingly executed upon him at Constance. This gave rise to a rebellion of the Hussites, who avenged his death by one of the fiercest and most terrible civil wars ever known.

HU'SO, a fish of the genus *Accipenser*, inhabiting the Danube and other rivers of Russia. Its mouth is in the upper part of the head, and its body is without prickles or protuberances. It grows to the length of 24 feet, and its skin is so tough, that it is used for ropes in drawing wheel carriages.

HUSTINGS, (from the Saxon word, *hustinge*, a council, or court,) a court held in the guildhalls of several English cities, as London, Westminster, Winchester, and York, by the principal officers of their respective corporations. Here, deeds may be inrolled, outlawries sued out, and replevins and writs of error determined: Here, also, the elections of officers and parliamentary representatives take place. In a popular sense, the word *hustings* is used for a place raised for the candidates at elections of members of parliament.

HUTCHINSO'NIANS, the defenders of the philosophy of John Hutchinson, who was born in the year 1674. Hutchinson disapproved of Woodward's theory of the earth, and of Newton's doctrine of gravity.

HY'ACINTH, in botany, a genus of plants, of several species, and a great number of varieties. The Oriental hyacinth has a large, purplish, bulbous root, from which spring several narrow, erect leaves, and a pyramidical stalk, adorned with many beautiful bell-shaped flowers, which in the different varieties are of various colours. In Holland the fondness for this plant has

amounted to a complete mania.——*Hyacinth*, in mineralogy, a genus of pellucid gems, whose colour is red with an admixture of yellow. The hyacinth, though less striking to the eye than any other red gems, is not without its beauty in the finest specimens. Its structure is foliated; its lustre, strong; its fracture, conchoidal; and it is found of various sizes, from that of a pin's head to the third of an inch in diameter. Like common crystal, it is sometimes found columnar, and sometimes in a pebble form; and is always hardest and brightest in the larger masses.

HYACIN'THIA, a Grecian festival in honour of Hyacinthus, kept at Amyclæ, in the month Hecatombæon. It continued three days, on the first of which all was lamentation, and mourning, and woe; but on the second and third days they danced and sung hymns to Apollo, offered sacrifices, exhibited spectacles, treated their friends, and enjoyed themselves with much festivity.

HYÆ'NA, or HYE'NA, a fierce and voracious quadruped, of the genus *Canis*. The neck is very thick, and covered with a kind of bristles instead of hairs, which naturally stand erect, and give a very formidable appearance to the creature; the body is bulky and rounded, and the shape not unlike that of a hog; the legs are moderately long, and very strong; and the general colour is a very dusky-olive. It inhabits Turkey, Syria, Persia, and Barbary, living in caverns and rocky places, and prowling about at night to feed on the remains of dead animals. Naturalists have described three species of the hyæna, the most common being the one we denominated the *striped* hyæna. It is not very swift, but is continually lying in wait for other creatures, and scarce any thing that comes in its way escapes it.

HYBER'NACLE, in botany, the winter-quarters of a plant, that is, a bulb or a bud, in which the embryo of a future plant is enclosed by a scaly covering and protected from injuries during winter.—— *Hybernation of Animals.* [See DORMANT.]

HY'BRID, an epithet for any animal whose sire is of one kind, and dam of another kind.

HYDAR'THRUS, a peculiar and dreadful disease of the joints, commonly termed the white swelling. The knee, ankle, wrist, and elbow, are the joints most subject to white swellings; but, as the name implies, the skin is not at all altered in colour. There is a great difference between that species of the disease which is called *rheumatic*, and that which is termed *scrophulous*; the latter being by far the more painful and dangerous.

HY'DATID, an animal substance, in shape like a small vesicle or bladder, and distended with an aqueous fluid, which is found in the viscera of the human body. The origin and real nature of hydatids are not fully ascertained; it is extremely probable, however, that they are a sort of imperfect animalcules. Those found in the livers of sheep are undoubtedly so, having been often seen to move when put into warm water; and they retain this power of motion many hours after a sheep has been killed.

HY'DRA, in natural history, the *Polypus*, an animal of the genus *Zoophyta*. There are five species, three of which are found in this country: of these, the principal is *Hydra viridis*, having about ten tentacles shorter than the body. It inhabits stagnant waters, and is found on the surface of plants, and appears at first sight like a little transparent green jelly. This is the appearance in the quiescent state, but when expanded, it is a linear body, fixed at one end, and surrounded at the other by tentacles or arms placed in a circle round the mouth, and generally producing its young from the sides. These, at first, seem small papillæ, increasing in length till they assume the form of the parent, and then dropping off. The whole tribe has a most wonderful faculty of re-producing parts which have been destroyed, and if cut or divided in any direction, each separate part becomes a perfect polype, as slips of certain plants become the same plants in perfect form.——*Hydra*, in astronomy, a southern constellation imagined to represent a water-serpent.——*Hydra*, a fabulous monster with many heads, that is said to have infested the lake of Lerna, in Peloponnesus. According to the fable, when one of the heads was cut off, it was immediately succeeded by another, unless the wound was cauterized. But Hercules killed this monster by applying firebrands to the wounds as he cut off the heads. Hence, when we speak of a multitude of evils, or the cause of them, we use the word *hydra*.

HY'DRAGOGUE, a medicine that possesses the quality of promoting the discharge of watery humours.

HYDRAN'GEA, in botany, a genus of plants, class 10 *Decandria*, order 2 *Digynia*. They are distinguished by their fine corymbs of light rose-coloured flowers, which retain their freshness for a long time, and succeed each other till late in the autumn.

HY'DRANT, in hydraulics, a pipe or machine with suitable valves and a spout, by which water is raised and discharged from the main conduit of an aqueduct.

HYDRAR'GYRUM, a name given to quicksilver, or mercury, on account of its liquid state. [See MERCURY.]

HY'DRATE, in chemistry, a solid which contains water in a fixed state, as slaked lime, soda, &c.

HYDRAUL'ICS, that branch of hydrostatics which teaches to estimate the velocity of moving unelastic fluids. It is this important science, that furnishes the principles upon which the engines are constructed, by which water is raised. Without it, water could not be laid into those dwellings, the bases of which are above the surface of rivers, nor could any be supplied to extinguish accidental fires. To these are to be added, pumps, steam-engines, fountains, and a variety of useful machines

by which the force of fluids is applied to practical purposes.——The Romans displayed their acquaintance with the art of carrying waters, in their famous aqueducts; and Frontinus, an engineer, who wrote on this subject, has given some few rules and hints on the motion of fluids. It is, however, only within the three last centuries, that this subject has attracted any particular notice.——*Hydraulic Press*, a machine of great power created by perpendicular action on a confined mass of water, which, when materials of great strength are used, produces an enormous force.——*Hydraulic Lime*, a species of lime that hardens under water.

HYDRIOD'IC, in chemistry, an epithet denoting a peculiar acid or gaseous substance, produced by the combination of hydrogen and iodine.

HYDROCAR'BONATE, in chemistry, carburetted hydrogen gas, or inflammable air.

HYDROCAR'DIA, in medicine, dropsy of the heart: a collection of fluid in the pericardium, which may be either coagulable lymph, serum, or a puriform fluid.

HYDROCEPH'ALUS, in surgery, a preternatural distention of the head, to an uncommon size, by a stagnation and extravasation of the lymph, which, when collected in the ventricles of the brain, is termed *hydrocephalus internus;* and when it is a collection of water between the membranes of the brain, it is called *hydrocephalus externus.*

HYDROCHLO'RATE, in chemistry, a compound of hydrochloric acid, or muriatic acid gas, with a base.

HYDROCYAN'IC, in chemistry, another name for Prussic acid, a most active and deadly poison.

HYDRODYNAM'ICS, the science which treats of the state and forces of liquids, at rest or in motion; of their equilibrium, cohesion, pressure, resistance, &c. It comprehends both *hydrostatics* and *hydraulics.*

HYDROFLUOR'IC ACID, in chemistry, an acid obtained by distilling a mixture of one part of the purest fluor spar in fine powder, with two of sulphuric acid.

HY'DROGEN, in chemistry, one of the constituents of water; eleven parts of hydrogen and eighty-nine of oxygen forming this fluid. It is never found but in a state of combination; and it approaches nearest to purity when combined with caloric, and in the form of gas. Whatever process decomposes water, will produce hydrogen gas, provided the oxygen of the water be absorbed by any other substance, as is seen in the following experiments. If water be dropped gradually through a gun-barrel, or iron pipe, made red hot in the middle, the water will be decomposed: the oxygen will form an oxyde or rust with the iron, and the hydrogen gas will come out pure from the opposite end. If you plunge a red hot iron into water, the hydrogen gas rises with the vapour, and is known by its peculiar smell. Hydrogen gas is twelve times lighter than common air, hence it has been applied to the filling of balloons. It is also highly inflammable under certain circumstances; hence it was formerly known by the name of *inflammable air.* It is incapable of supporting flame or combustion of itself, burning only in consequence of its strong attraction for oxygen. Hydrogen also forms one of the constituents of coal, from which it may be extracted in the form of gas; hence it has been used for lighting up streets and houses by what is called gas-lights. [See the articles GAS and GAS-LIGHTS.] To procure hydrogen gas, provide a phial with a cork stopper, through which is thrust a piece of tobacco pipe. Into the phial put a few pieces of zinc, or small iron nails: on this pour a mixture of equal parts of sulphuric acid (oil of vitriol) and water, previously slowly mixed in a tea-cup to prevent accidents. Replace the cork stopper with the piece of tobacco pipe in it. The hydrogen gas will then be liberated through the pipe in a small stream. Apply the flame of a candle or taper to this stream, and it will immediately take fire and burn with a clear flame until all the hydrogen in the phial be exhausted. In this experiment, the zinc or iron, by the action of the acid becomes oxygenized and is dissolved, thus taking the oxygen from the sulphuric acid and water. The hydrogen, the other constituent part of the water, is thus liberated and ascends. Hydrogen gas, besides being combined with water, may also be combined with sulphur, phosphorus, and carbon. It is then called sulphuretted hydrogen, phosphuretted hydrogen, and carburetted hydrogen. Sulphuretted hydrogen gas forms part of the fetid effluvium which rises from house-drains, and is produced by the decomposition of animal and vegetable substances, containing sulphur and hydrogen. Phosphuretted hydrogen gas has a fetid putrid smell, and takes fire whenever it comes in contact with the atmospheric air.

HYDRO'GENATE, or HYDRO'GENIZE, to combine hydrogen with anything.

HYDROG'RAPHY, the art of measuring and describing rivers, bays, lakes, gulfs, channels, and other collections of water.

HY'DROLITE, in mineralogy, a kind of stone whose crystals are described as six-sided prisms, terminated by low six-sided pyramids, with truncated summits.

HYDROL'OGY, that part of natural history which treats of and explains the nature and properties of waters in general.

HY'DROMANCY, a method of divination by water, amongst the ancients, performed by holding a ring in a thread over the water, and repeating, along with the question to be solved, a certain form of words. If the question was answered affirmatively, the ring of its own accord struck the sides of the bowl.

HYDROM'ETER, an instrument for measuring the density and gravity, &c. of water and other liquids. That which is designed simply for ascertaining the specific gravity of different waters is more commonly called an aerometer or waterpoise,

OXYGEN GAS, THOUGH A POWERFUL SUPPORTER OF RESPIRATION, WOULD IN TIME DESTROY LIFE BY EXCESS OF ARTERIAL ACTION.

WATER WHICH BOILS AT TWENTY-ONE DEGREES AT THE FOOT OF MONT BLANC, BOILS AT ONE HUNDRED AND EIGHTY-SEVEN AT ITS SUMMIT.

the term hydrometer being more commonly used to denote an instrument for measuring the specific gravity of spirits, though sometimes used indifferently for either. The use of the hydrometer depends on the following propositions:—1. The hydrometer will sink in different fluids in an inverse proportion to the density of the fluids; 2. the weight required to sink an hydrometer equally far in different fluids, will be directly as the densities of the fluids. Each of these two propositions gives rise to a particular kind of hydrometer; the first with the graduated scale, the second with weights: the latter deserves the preference.

HY'DROMEL, a liquor consisting of honey diluted with water. Before fermentation, it is called *simple hydromel;* after fermentation, *vinous hydromel* or *mead.*

HY'DROPHANE, in mineralogy, a variety of the opal, made transparent by immersion in water.

HYDROPHO'BIA, in medicine, a symptom of canine madness, or the disease itself. This peculiar affection arises in consequence of the bite of a rabid animal, as a dog or cat, and is termed *hydrophobia,* because persons that are thus bitten, when first seized, dread the sight of water. According to the generally received opinion of medical practitioners, there is no known cure for this terrible disease; and the only preventive to be relied upon is the complete excision of the bitten part, which should be performed as soon as possible. ——In *The Athenæum,* Jan. 26, 1839, are the following important lines:—"HYDROPHOBIA. *An American physician is said to have discovered, that a few drops of any mineral acid, applied to the bite of a rabid animal, will prevent hydrophobia. This acid decomposes the poisonous saliva, and cannot be injurious.*" We know not whether the paragraph we here quote has, or has not, attracted the attention of any of those scientific individuals (and we believe there are many) whose lives are philanthropically devoted to the alleviation of human suffering; but, with such a statement before our eyes, we should reproach ourselves with the neglect of a serious duty were we not to give it all the publicity in our power; and we sincerely hope that so simple a remedy (should it prove to be one) for the most dreadful of all maladies, may be the subject of the most scrutinizing investigation that it is capable of receiving from minds thoroughly imbued with chemical and medical science.

HYDROPHTHAL'MIA, in medicine, a swelling of the bulb of the eye, from too great a collection of the vitreous or aqueous humours. There is another disease so called, which is a mere anasarcous swelling of the eyelid.

HY'DROPS, in medicine, a preternatural collection of serous or watery fluid in the cellular substance, or different cavities of the body. It receives different appellations according to the particular situations in which it is lodged; as *hydrocephalus, hydrothorax,* &c.

HY'DROSCOPE, an instrument formerly used for measuring time. The hydroscope was a kind of water-clock, consisting of a cylindrical tube, conical at the bottom: the cylinder was graduated, or marked with divisions; and as the surface of the water, which trickled out at the point of the cone, successively sunk to these several divisions, it pointed out the hour.

HYDROSTA'TICS, that branch of the science of hydrodynamics which treats of the weight, motion, and equilibrium of fluids, particularly of water. The pressure of a fluid upon any given part of the bottom or sides of a vessel is equal to the weight of a column of that fluid, having a base equal to that part of the bottom or side, and an altitude equal to the perpendicular height of the fluid above it. Hence may be calculated the pressure upon, and the strength required for dams, cisterns, pipes, &c. And thus we are led to what is called the *hydrostatical paradox,* which is of vast importance in this science: viz.—that any quantity of fluid, however small, may be made to balance any other quantity, however large. And yet there is nothing more paradoxical in it than that one pound at the long end of a lever should balance ten pounds at the short end; it is, indeed, but another means, like the contrivances called *mechanical powers,* of balancing different intensities of force by applying them to parts of an apparatus which move with different velocities. This law of pressure is rendered very striking in the experiment of bursting a strong cask by the action of a few ounces of water. Suppose a cask already filled with water, and let a long tube be screwed tightly into its top, which tube will contain only a few ounces of water; by filling this tube the cask will be burst. The explanation of the experiment is this: if the tube have an area of a fortieth of an inch, and contain half a pound of water, this will produce a pressure of half a pound upon every fortieth of an inch over all the interior of the cask. The same effect is produced in what is called the hydrostatical bellows.

HYDROSTA'TICAL BAL'ANCE, a kind of balance contrived for the finding the specific gravities of bodies, solid as well as fluid.

HYDROSTA'TICAL BEL'LOWS, a machine for showing the upward pressure of fluids. It consists of two circular or oval boards, covered with leather, to rise and fall like common bellows, but without valves. A pipe about 3 or 4 feet long is fixed to the under board. If a little water run into the bellows to separate the boards, then weights to the amount of two or three hundred pounds may be put on the upper board; after which, if the pipe be supplied with water, it will by the upper pressure raise the weights and sustain them. The hydrostatic or *hydraulic press* of Mr. Bramah is constructed on this principle: a prodigious force is thus obtained with great ease, and in a small compass, so that, with a machine the size of a common teapot, a bar of iron may be as easily cut as a slip of pasteboard.

THE MOST CERTAIN SYMPTOM OF MADNESS IN DOGS, IS, THAT ALL OTHER DOGS AVOID AND RUN AWAY FROM ONE THAT IS MAD.

THE DEVELOPMENT OF THE RABID SYMPTOMS, IN MAN, RARELY TAKES PLACE BEFORE THE FORTIETH OR AFTER THE SIXTIETH DAY.

A small forcing pump takes the place of the tube in the instrument above described, and a pump barrel and piston is substituted for the bellows; water is then driven from the small pump into the large barrel under the piston, and the piston is thus pressed against the object to be operated upon. If the small pump have one-thousandth of the area of the large barrel, and the force of 500 pounds be applied to its piston by its lever handle, the great piston will rise with a force equal to one thousand times 500 pounds, or more than 200 tons. The uses to which this power may be applied, are of great variety and extent; and it would not excite our wonder to find, ere long, that some phenomena equalling those of steam may result from its application to purposes of which at present we have formed no idea.

HYDROSULPH'URET, or HYDROSULPH'ATE, in chemistry, a combination of sulphuretted hydrogen with an earth, alkali, or metallic oxyde.

HYDROTHO'RAX, in medicine, dropsy of the chest. It frequently takes place to a considerable degree before it becomes perceptibly known; and its presence is not readily discovered, the symptoms, like those of hydrocephalus, not being always very distinct.

HYDROXAN'THIC, or CARBO-SULPHURIC, in chemistry, terms used to denote an acid, formed by the action of alkalies on the bisulphuret of carbon.

HY'DRURET, in chemistry, a combination of hydrogen with sulphur, or of sulphur and sulphuretted hydrogen.

HYGE'IST, a word derived from *Hygeia*, the goddess of health; denoting that by the right use of medical science our health may be preserved. But, alas! in these days of presumption, we find the term associated with the name of one of those pests of society—an unblushing empiric! When the healing art was practised in the temple of Æsculapius, the god of medicine and the goddess of health were always in close connexion: the dictates of the one were the maxims of the other. Little did their votaries think that the temple of their smiling goddess was doomed to be transformed into a quack-doctor's shop, or that her health-inspiring bowl would be one day metamorphosed into a pill-box! We recollect having once thrown a poetical dart (a pointless one, as it has proved) at these nefarious life-destroyers, under the title of "The Empiric;" from which, with pardonable egotism, we trust, we may here be allowed to transcribe (merely) the concluding stanza;—

Hygeia, hail! I'll drink at thy pure spring,
Where Temperance and Exercise preside;
And while life's dearest boon thy handmaids bring,
Though from the wine-press flow the purple tide,
The tempting goblet from my lips I'll fling—
Scorning the gifts by luxury supplied.
Hail! then, Hygeia, hail! "thee, goddess, I adore,"
For, blest with health, I'm rich,—though scanty be my store!

HYGROM'ETER, in hydrostatics, an instrument to show the presence of water in the air, its variation in quantity, and its actual quantity existing in a given bulk of air at any given time. There are many sorts of hygrometers; for whatever body either swells or shrinks, by dryness or moisture, is capable of being formed into one. The deposition of moisture upon a decanter of water, fresh filled from a well in summer, is, perhaps, the most familiar instance of the hygrometer. This degree is called the *dew point*, as it is also the temperature of grass, upon which the dew first begins to form in a clear evening.

HYMENOP'TERA, an order of insects in the Linnæan system, having four membranaceous wings, and the tails of the females furnished with stings.

HYOSCIA'MA, in chemistry, a new vegetable alkali, extracted from the *Hyoscia-mus nigra*, or Henbane.

HYPAL'LAGE, in grammar, a figure consisting of a mutual change of cases: a species of hyperbaton.

HY'PER, a Greek word signifying *over*, which is used in English composition to denote excess, or something *over* or beyond what is necessary.

HYPER'BATON, in grammar, a figurative construction inverting the natural and proper order of words and sentences. The species are the *anastrophe*, *hypallage*, &c.; but the proper hyperbaton is a long retention of the verb which completes the sentence.

HYPER'BOLA, in conic sections and geometry, a curve formed by cutting a cone in a direction parallel to its axis; and if the plane be produced so as to cut the opposite cone, another hyperbola will be formed, which is called the opposite hyperbola to the former.——*Hyperbolic space*, the space or content comprehended between the curve of the hyperbola and the whole ordinate.

HYPER'BOLE, in rhetoric, an exaggerated representation of anything, beyond the bounds of truth or even probability, as, "he ran swifter than the wind;" "he went slower than a tortoise," &c. Aristotle observes, that hyperboles are the favourite figures of young authors, who love excess and exaggeration; but that philosophers should not use them without a great deal of caution.

HYPER'BOLOID, in geometry, a solid formed by the revolution of an hyperbola about its axis.

HYPERBO'REANS, the name given by the ancients to the unknown inhabitants of the most Northern regions of the globe, who were reported always to enjoy a delightful climate, being, according to their notions, situated beyond the domain of Boreas or the north wind; but, in fact, they were the Laplanders, the Samoiedes, and the most northern of the Russians.

HYPERCATALEC'TIC, in Greek and Latin poetry, a verse which has a syllable or two beyond the regular and just measure.

HYPERCRIT'IC, one who is critical beyond measure or reason; animadverting on

FLUIDS HAVE WEIGHT, AND GRAVITATE TOWARDS THE EARTH ACCORDING TO THEIR DENSITY, BUT THEY PRESS LATERALLY ALSO.

HYGROSCOPES ONLY SHOW THE CHANGES OF HUMIDITY OR DRYNESS IN THE AIR, BUT HYGROMETERS BOTH SHOW AND MEASURE THEM.

faults with unjust severity, and shutting his eyes to the merits of a performance: a being more to be feared than envied.

HYPER'METER, a verse containing a syllable more than the ordinary measure. When this is the case, the following line begins with a vowel, and the redundant syllable of the former line blends with the first of the following.

HY'PERSTHENE, in mineralogy, Labrador hornblende. Its colour is between a gray and greenish black, but nearly copper-red on the cleavage.

HY'PHEN, a mark or character, in grammar, implying that two words are to be connected; as pre-established, five-leaved, &c. Hyphens also serve to show the connexion of such words as are divided by one or more of the syllables coming at the end of a line.

HYPNOT'IC, in the materia medica, an epithet for such medicines as have the quality of producing sleep, whether called narcotics, hypnotics, opiates, or soporifics.

HYPOB'OLE, in rhetoric, a figure in which several things are mentioned that seem to make against the argument or in favour of the opposite side, and each of them is refuted in order.

HYPOCHON'DRIA, in anatomy, the sides of the belly under the cartilages of the spurious ribs.

HYPOCHONDRI'ASIS, in medicine, an affection characterized by dyspepsia; languor and want of energy; sadness and fear, arising from uncertain causes; with a melancholic temperament. The principal causes are sorrow, fear, or excess of any of the passions; too long continued watching; and irregular diet. *Hypochondriacs* are continually apprehending future evils; and in respect to their feelings and fears, however groundless, there is usually the most obstinate belief and persuasion.

HYP'OCIST, an inspissated juice expressed from the unripe fruit of the *sessile asarum*, formed into cakes, and dried in the sun. It is used in medicine as an astringent.

HYPOCRATER'IFORM, in botany, tubular but suddenly expanding into a flat border at top: applied to a monopetalous corolla.

HYPOGAS'TRIC, in medicine, relating to the *hypogastrium*, or middle part of the lower region of the belly. Also, an appellation given to the internal branch of the iliac artery.

HYPOGAS'TROCELE, in surgery, a hernia, or rupture of the lower belly.

HYPOGE'UM, a name given by ancient architects to all the parts of a building which were under ground, as the cellar, &c.

HYPOGLOS'SI, in anatomy, the ninth pair of nerves, which arise just above the *foramen magnum*, and pass out at the holes on its sides, above the condyles of the *os occipitis*.

HYPO''GYNOUS, in botany, a term applied to plants that have their corols and stamens inserted under the pistil.

HYPOPHOS'PHITE, in chemistry, a compound of hypophosphorous acid and a salifiable base.

HYPOPHOS'PHOROUS ACID, in chemistry, an acid obtained from the phosphoret of barytes. It has a very sour taste, reddens vegetable blues, and does not crystalize.

HYPO'PIUM, in medicine, matter deposited in the anterior chamber of the eye in consequence of inflammation.

HYPOS'TASIS, in theology, a term used to denote the subsistence of the Father, Son, and Holy Spirit, in the Godhead, called by the Greek Christians, three *hypostases*. The Latins more generally used *persona*, and this is the modern practice: hence we say, the Godhead consists of three *persons*.

HYPOSUL'PHATE, in chemistry, a compound of hyposulphuric acid and a base. ——*Hyposulphite*, a compound of hyposulphurous acid and a salifiable base.

HYPOSUL'PHURIC ACID, in chemistry, a combination of sulphur and oxygen, intermediate between sulphurous and sulphuric acid. —— *Hyposulphurous acid*, an acid containing less oxygen than sulphurous acid.

HYPOTH'ENUSE, or HYPOT'ENUSE, in geometry, the subtense or longest side of a right-angled triangle, or the line that subtends the right angle.

HYPOTH'ESIS, a principle taken for granted, in order to draw a conclusion therefrom for the proof of a point in question. Also, a system or theory imagined or assumed to account for what is not understood.

HY'SON, in commerce, a species of green tea from China.

HYS'SOP, in botany, a genus of plants, one species of which is cultivated for use. The leaves have an aromatic smell, and a warm pungent taste.

HYSTER'ICS, or HYSTE'RIA, in medicine, a disease which attacks in paroxysms or fits, which are readily excited in those who are subject to them, by passions of the mind, and by every considerable emotion, especially when brought on by surprise; hence, sudden joy, grief, fear, &c., are very apt to occasion them.

HYSTERON PROT'ERON, two Greek words, meaning *the last first*: hence it is used to designate, in rhetoric, the figure in which that word which should follow is used first; as, *Valet atque vivet* (he is well and lives).

HYSTEROT'OMY, in surgery, the Cæsarean section, or operation for extracting the fœtus.

AN ARTIFICIAL PREPARATION OF ICE MAY BE MADE BY EQUAL MIXTURES OF NITRATE OF AMMONIA, SUBCARBONATE OF SODA, AND WATER.

I.

I, the ninth letter in the alphabet, and the third vowel. Its sound varies; in some words it is long, as *high, mind, pine;* in some it is short, as *bid, kid;* and in others it is pronounced like *y*, as *collier, onion*, &c.; in a few words its sound approaches to the *ee* in *beef*, as in *machine*, which is the sound of the long *i* in all European languages except the English. In all Latin words of Latin origin, *i* preceding a vowel (unless it follows another vowel), is a consonant, as *Ianus* (*Janus*), *coniicio* (*conjicio*); but in words of Greek origin, it is a vowel, as *iambus, iaspis.* No English word ends with *i*, but when the sound of the letter occurs at the end of a word, it is expressed by *y*. I, used as a numeral, signifies no more than one, and it stands for as many units as it is repeated times; thus II stands for 2, and III for 3. When put before a higher numeral it subtracts itself, as IV, four; and when set after it, the effect is addition, as XII, twelve.

IAM'BIC, or IAM'BUS, in poetry, a foot consisting of two syllables, the first short and the last long, as in *declare, adorn.* Thus, verses composed of short and long syllables alternately are termed *iambics:* as,

If ty | rant fac | tion dare | assail | her throne,
A peo | ple's love | shall make | her cause | their own.

I'BERIS, in botany, Candy-tuft, a genus of plants, class 15 *Tetradynamia*, order 1 *Siliquosa.*

I'BEX, in zoology, an animal of the goat kind, by some naturalists (but, it is believed, erroneously) called the wild goat of the genus *Capra.* It has extremely long knotty horns, which bend backwards, and are of a blackish colour, and annulated on the surface. The body is of a dusky yellowish brown colour, and is less in proportion to the height than that of the common goat: it has, indeed, a great resemblance to the deer-kind; the legs are also perfectly like those of the deer, straight, elegant, and slender. The hair is harsh, and the male is furnished with a black beard. They inhabit the chain of mountains extending from mount Taurus, between Eastern Tartary and Siberia; they are also to be met with in the most precipitous and inaccessible parts of the Alps. They are remarkably swift, and display amazing dexterity and agility in leaping; so that the ibex hunter is constantly in imminent peril, from the fear of losing his footing when scaling tremendous precipices, from the animal, when closely pursued, turning suddenly on his enemy. Their cry is a sharp, short whistle, not unlike that of the chamois, but of shorter duration; sometimes, especially when irritated, they make a snorting noise.

I'BIS, in ornithology, a genus of birds of the grallic order, found chiefly in warm climates, more particularly in Egypt. The bill is long, subulated, and somewhat crooked; the head and throat bare; legs long, and the feet have four toes palmated at the base. They perform a powerful and elevated flight, extending their neck and legs, and uttering a hoarse croak. The white ibis (*ibis religiosa* of Cuvier) arrives in Egypt about the time that the inundation of the Nile commences, and migrates about the end of June, at which time it is first noticed in Ethiopia. The scarlet ibis (*ibis rubra*), a splendid bird, is found in the hottest parts of America, in large flocks; the plumage is scarlet; beak naked; part of the cheeks, legs, and feet, pale red. Other species are found in India, Madagascar, Cape of Good Hope, and Mexico. The ibis of the Egyptians was anciently venerated; and ibis mummies have been found in great numbers there.

ICE, water or other fluid congealed, or in a solid state. When water is exposed to a temperature below 32° of Fahrenheit, it assumes a solid state by shooting into crystals, which cross each other in angles of 60 degrees. Ice is always found at the same temperature or 32°; it is lighter than water, so of course its bulk is larger than that of water of which it is formed, and this increase of dimensions is acquired with prodigious force, sufficient to burst the strongest vessels. [See FREEZING, &c.]

I'CEBERGS, masses of ice carried by the winds through the Polar Seas, often of enormous size and height, as 300 or 400 feet above the water, and four or five times as much below it. Within the arctic circle, the congelation begins by the first of August, and a sheet of ice, perhaps of an inch thick, is formed in a single night. In a short time, the whole extent of the polar seas is covered with a vault several feet thick. As soon as the summer heat commences, it is softened, and, with the first swell of the ocean, breaks up, and the fields of the saline ice are thus annually formed and destroyed.

——*Floating Ice.* There are numerous terms for this: a large flat mass extending beyond the reach of sight is called *field-ice;* one of smaller dimensions, a *floe;* when a field is much broken up, it is called a *pack.* If the ship can sail freely through the floating pieces of ice, it is called *drift-ice.* A portion of ice rising above the common level is called a *hummock*, being produced by the crowding of one piece over another.

I'CE-BLINK, a name given by seamen to a whitish appearance in the horizon, occasioned by fields of ice, which reflect the light obliquely against the atmosphere.

I'CE-HOUSE, a building contrived to preserve ice in hot weather; the ice being

VAPOUR RAISED BY THE HEAT OF THE SUN, IS PRECIPITATED BY THE COOL AIR OF THE ATMOSPHERE, AND DESCENDS AS RAIN OR HAIL.

rammed as close as possible, and at the bottom is a well to drain off the water from any part that melts.

I'CELAND SPAR, in mineralogy, calcareous spar, in laminated masses, easily divisible into rhombs.

ICE PLANT, *(mesembryanthemum crystalinum)* a plant remarkable for the little transparent, icy vesicles which cover its whole surface. The stems are herbaceous and much ramified, and the flowers are white.

ICH DIEN, the motto of the prince of Wales's arms, signifying, *I serve.* It was first used by Edward the Black Prince, to show his subjection to his father king Edward III.

ICHNEU'MON, in zoology, an animal of the genus *Viverra*, or weasel kind. Its ordinary colour is a chesnut brown; the tail tapers to a point, and the toes are distant from each other. The habits of the ichneumon are very similar to the ferret: like that animal, it preys upon poultry, destroys rats, &c.; but it also destroys the most venomous serpents, and seeks the eggs of the crocodile, digging them out of the sand, and eating them with the greatest avidity. In India and Egypt they are domesticated for the purpose of destroying rats and mice.

ICHNEUMON-FLY, a genus of insects of the *Hymenoptera* order. There are said to be 500 species included in this genus, separated into families. The whole genus has been denominated parasitical, on account of the very extraordinary manner in which they provide for the future support of their offspring. The fly feeds on the honey of flowers, and when about to lay eggs, perforates the body of some other insects or its larvæ, with its sting or instrument at the end of the abdomen, and there deposits them. These eggs, in a few days, are hatched, and the young nourish themselves with the juices of their foster-parent, which, however, continues to move about and feed till near the time of its change to a chrysalis, when the larvæ of the ichneumon creep out by perforating the skin in various places, and each spinning itself up in a small oval silken case, changes into a chrysalis, and after a certain period they emerge in the state of complete ichneumons. They are great destroyers of caterpillars, plant-lice, and other insects, as the ichneumon is of the eggs and young of the crocodile.

ICHNOG'RAPHY, in perspective, the view of any thing cut off by a plane parallel to the horizon, just at the base of it.——In architecture, the ground plan of a building.——In fortification, a draught of the length and breadth of the works raised about a place.

I'CHOR, a thin, watery humour, like serum; but the word is sometimes also used for a thicker kind, flowing from ulcers, called also *sanies.*

ICHTHYI'TES, in mineralogy, a stone so called because it has a cavity in it resembling a fish.

ICHTHYOCOL'LA, Isinglass [which see.]

ICH'THYOLITE, in the natural history of fossils, the figure or impression of a fish in a rock.

ICHTHYOL'OGY, that part of zoology which treats of fishes, their structure, form, and classification, their habits, uses, &c. These animals are divided into five orders, namely, into *apodal*, or those which have no ventral fins; *jugular*, which have the ventral fins placed more forward than the pectoral; *abdominal*, or those which have the ventral fins situated behind; *thoracic*, or those which have their ventral fins situated immediately under the pectoral; and *cartilaginous* fishes, which have a cartilaginous instead of a bony skeleton. Cuvier's classification, however, is much more extensively divided; but unless our space would permit us to describe the different orders and families, the mere enumeration of them would furnish no useful information.

ICHTHYO'SIS, in medicine, a cutaneous disease, deriving its name from the resemblance of the scales to those of a fish.

I'CONISM, in rhetoric, a figure of speech which consists in representing a thing to the life.

ICON'OCLASTS, that party of Christians which would not tolerate images in their churches, much less the adoration of them. Images and paintings were unknown in the Christian church till the fourth century; and the opposition to them was long continued with great violence.

ICONOG'RAPHY, the description of images or ancient statues, busts, semi-busts, paintings in fresco, mosaic works, &c.

ICOSAHE'DRON, in geometry, a regular solid, consisting of twenty triangular pyramids, whose vertices meet in the centre of a sphere supposed to circumscribe it, and therefore have their heights and bases equal.

ICOSAN'DRIA, in botany, the twelfth class in the Linnæan system, including plants with twenty stamens or more to their flowers, as the melon, Indian fig, pomegranate, plum, &c.

IC'TERUS, in medicine, the jaundice. It is placed by Cullen, in his Nosology, as a genus of diseases, class *Cachexiæ*, order *Impetigines.*

IC'TERUS, in medicine, the disease which we distinguish by the name of jaundice.

IDE'A, in general, the image or resemblance of a thing, which, though not seen, is conceived by the mind; conception, apprehension, notion; whatever is held or comprehended by the understanding or intellectual faculties. In logic, *idea* denotes the immediate object about which the mind is employed, when we perceive or think of any thing.

IDE'AL, an imaginary model of perfection. In creating the *ideal of beauty*, man does not follow the arbitrary suggestions of

IN ALL FISHES, THE HEAD AND TRUNK ARE CONNECTED IMMEDIATELY, WITHOUT BEING SEPARATED BY A NECK INTERVENING.

THE EYES OF FISHES ARE MUCH LARGER IN PROPORTION THAN IN QUADRUPEDS, AND ALL THEIR MOTIONS ARE REGULATED BY THEM.

fancy, but strives to discover and present the prototypes of nature. Imagination finds the materials of the ideal in reality, but she unites the separate traits of the grand and the beautiful, dispersed through nature, in one perfect ideal. So, too, there may be ideals of the hateful and the horrid, the grand or the mean, the heroic or the ridiculous; for the ideal aims merely at completeness. The claims of the fine arts are satisfied when the beautiful is combined with the true; but truth must in no case be sacrificed to beauty.

IDE'ALISM, that system of philosophy which makes every thing to consist in ideas, and denies the existence of material bodies. In a work entitled "Guesses at Truth," (Lond. 1827) it is very appositely said, "*Materialism* is a circumference without a centre; *idealism* is a centre without a circumference."

IDEOGRAPH'IC, an epithet given to that kind of writing which expresses the ideas and not the sound. It is a species of hieroglyphics.

IDES, eight days in each month of the Roman calendar. They began on the 15th of March, May, July, and October; and on the 13th of the other months. The Ides, like the calends and nones, were always reckoned backwards; thus they said viii Idus, the eighth day before the Ides, vii Idus, the 7th before the Ides, &c. This method of reckoning is still retained in the chancery of Rome, and in the calendar of the breviary.

IDIOLEC'TRIC, containing electricity in its natural state, or electric *per se*.

ID'IOM, in grammar, is a term applied to such words, or combinations of words, as have a peculiar sense in any one language; but which, if transferred into another, would have no meaning, or a wholly different one. Idioms, then, can never be literally translated; and the merit of a translator, in this respect, consists in substituting the corresponding *idiom* of the language into which he is translating.

IDIOPATH'IC, a term for any disorder peculiar to a certain part of the body, and not arising from any preceding disease; in which sense, it is opposed to sympathetic. Thus, an epilepsy is *idiopathic*, when it happens merely through some fault in the brain; and *sympathetic*, when it is the consequence of some other disorder.

IDIOSYN'CRASY, a peculiar temperament or organization of body, whereby it is rendered more liable to certain disorders, than bodies differently constituted usually are.

I'DLENESS, the state of a person who is unoccupied in labour, and is generally the effect of laziness. "Alphonsus, king of Arragon, being told by one of his courtiers that it did not become his state and grandeur to employ himself as other men, he answered,—'Think ye that God and nature have given kings hands only to feed themselves withal?' The whole creation condemns and confutes *idleness*; the sun, moon, stars, herbs, plants, sensible creatures, confute the slothful, preach down idleness, and call for labour and diligence."

I'DOCRASE, a mineral found near Vesuvius, in unaltered rocks ejected by the volcano, and in various other places. It is very often found in shining prismatic crystals, its primitive form being a four-sided prism with square bases.

IDOL'ATRY, in its literal acceptation, denotes the worship paid to idols. It is also used to signify the superstitious adoration paid to other objects. Soon after the flood, idolatry seems to have been the prevailing religion of all the world; for wherever we cast our eyes at the time of Abraham, we scarcely see anything but false worship and idolatry. The heavenly bodies appear to have been the first objects of idolatrous worship; and, on account of their beauty, their influence on the productions of the earth, and the regularity of their motions, the sun and moon were particularly so, being considered as the most glorious and resplendent images of the Deity: afterwards, as their sentiments became more corrupted, they began to form images, and to entertain the opinion, that by virtue of consecration, the gods were called down, to inhabit or dwell in their statues. Hence Arnobius takes occasion to rally the pagans for guarding so carefully the statues of their gods, who, if they were really present in their images, might save their worshipper the trouble of securing them from thieves and robbers. But history plainly teaches us, that before the idea of one infinite and true God was properly comprehended by men, their imaginations created rulers and deities, to whom they ascribed the direction of all outward events, and every tribe or family had its peculiar object of adoration. The selfish and cunning turned this frailty to their own advantage; and hence originated seers, oracles, and all the numerous superstitions which have disgraced the world.

I'DYL, a short pastoral poem, such as the Idyls of Theocritus, Gesner, &c.

IGNES'CENT, in mineralogy, an epithet applied to a stone or mineral which gives out sparks when struck with steel or iron.

IG'NIS FAT'UUS, a meteor or light that appears in the night over marshy grounds. It is occasioned by an ascent from the ground of phosphuretted hydrogen gas, decomposed from animal and vegetable remains, whose own motions ignite it in the air. It is vulgarly called *Will-o'-the-wisp*, or *Jack-o'-lantern*.

IGNISPI'CIUM, a species of divination practised by the Romans, which consisted of observations made on the fire used in sacrifices.

IG'NIS JUDI'CIUM, in archæology, the old judicial trial by fire.

IG'NIS SA'CER, in medicine, the disease vulgarly known by the name of St. Anthony's fire.

IGNI'TION, in chemistry, the application of fire to metals, &c. till they become luminous, or red hot, without melting. Some metals liquefy before they become ig-

nited, as lead and tin; iron, on the other hand, becomes ignited long before it melts.

IGNORA'MUS, in law, the term used by the grand jury when they *ignore* or throw out a bill of indictment. It denotes 'We know nothing about it, or have not sufficient evidence respecting it.'

IGUA'NA, in zoology, a lizard, of which there are many species found in the tropical parts of America. They are characterized by a body and long round tail covered with imbricated scales, five toes on each foot, and the crest of the throat and the dorsal suture dentated. They feed on fruits, seeds, and leaves. The female deposits her eggs, which are about the size of a pigeon's, in the sand. Some species attain a great size, and are very active; but, although formidable in appearance, they are all timid and defenceless.

IGUAN'ODON, the name given by Dr. Mantel, to an enormous fossil amphibious animal, 50 or 60 feet long, discovered by him in Tilgate Forest, Sussex, amid numerous other remains, animal and vegetable, of species not existing. In May, 1835, another interesting specimen of the Iguanodon skeleton was discovered in the sparkling sand formation, in the neighbourhood of Maidstone, and has been placed in the museum of Dr. Mantel, at Brighton. The quarry in which these remains occurred consists of many strata, regularly alternating, of compact limestone, and of sand more or less loose. The animal when living must have been upwards of 60 feet in length. The bones are imbedded in the stone in a very confused manner, and all of them are more or less distorted by the compression they had undergone since their first envelopment in the rock, which, we need scarcely observe, was originally sand. The recent Iguana, as is well known, lives chiefly upon vegetables; and it is furnished with long and slender toes, by which it is enabled to climb trees with great facility in search of food; but no tree could have borne the weight of the colossal Iguanodon. Its enormous bulk would require to be supported by feet of corresponding solidity; accordingly we find that the hind feet, as in the hippopotamus and rhinoceros, were composed of strong, short, massy bones, and furnished with claws, not hooked, as in the Iguana, but compressed, as in the land tortoises. But in the fore feet or hands of the Iguanodon, the bones are analogous to those of the fingers of the Iguana; long, slender, flexible, and armed with curved claw-bones; thus furnishing a prehensile instrument, to seize and tear to pieces the palms, arborescent ferns, and dragon-blood plants, which constituted the food of the Iguanodon.

I. H. S. an abbreviation for *Jesus Hominum Salvator*, Jesus the Saviour of Mankind.

I'LEX, the Holly, in botany, the name of a genus of evergreen shrubs, class 4 *Tetandria*, order 3 *Tetragynia*.

IL'IAC PASSION, a sort of nervous colic, in which the fæcal portion of the food is voided by the mouth.——*Iliac region*, the side of the abdomen between the ribs and the hips.

IL'IAD, an epic poem in 24 books, composed by Homer. The subject of this poem is the wrath of Achilles, in describing which, the poet exhibits the countless evils which spring from disunion and public dissensions.

IL'IUM OS, in anatomy, the haunch-bone.

ILLI''CIUM, the Aniseed-tree; a genus of plants, consisting of two species, viz. the *illicium anisatum*: and *illicium floridanum*. The whole of the first-mentioned plant, especially the fruit, has a pleasant aromatic smell, and a sweetish acrid taste. They belong to class 13 *Polyandria*, order 7 *Polygamia*.

ILLUMINA'TI, the name given to certain associations of men in modern Europe, who combined to overthrow the existing religious institutions, and to substitute for them their boasted "law of reason." They sprung up at Ingolstadt, in 1776, and the society there was dissolved by the Bavarian government in 1784: not however, till their tenets had been indefatigably and widely promulgated. By some writers the *Illuminati* are said to have had a powerful influence in promoting the French revolution; and by others the assertion is flatly denied.—— Among the early Christians, the term *Illuminati* was given to persons who had received baptism; in which ceremony they received a lighted taper, as a symbol of the faith and grace they had received by that sacrament.

ILLU'MINATING, the art of laying colours on initial capitals in books, or otherwise embellishing manuscript books, as was formerly done by artists called *Illuminators*. These manuscripts, containing portraits, pictures, and emblematic figures, form a valuable part of the riches preserved in the principal libraries in Europe.

IM'AGE, in optics, is the appearance of an object made either by reflection or refraction. In *plane* mirrors, the image is of the same magnitude as the object, and appears as far behind the mirror as the object is before it. In *convex* mirrors, the image is less than the object, and farther distant from the centre of the convexity, than from the point of reflection.——*Image*, in rhetoric, a lively description of any thing in discourse, which presents a kind of picture to the mind.——*Image*, in a religious sense, is an artificial representation of some person or thing, used either by way of decoration and ornament, or as an object of religious worship and veneration.

IMAGINA'TION, in metaphysics, that action of the mind by which it combines ideas, and "bodies forth the forms and images of things." The *Edin. Encyc.* observes: "We would define imagination to be the will working on the materials of memory; not satisfied with following the order prescribed by nature, or suggested by accident, it selects the parts of different conceptions, or objects of memory, to form

a whole more pleasing, more terrible, or more awful, than has ever been presented in the ordinary course of nature." In popular language, and in poetry, it is often confounded with *fancy*; but, strictly speaking, fancy is a lower property of the mind than the sublime faculty of the imagination, which elevates the mind by ideal creations, and ennobles man's existence.

IM'AM, or IM'AN, a Mahometan priest or head of the congregations in their mosques. In ecclesiastical affairs they are independent, and are not subject to the mufti, though he is the supreme priest.

IM'BRICATE, or IM'BRICATED, in botany, lying over each other, like tiles on a roof; parallel, with a straight surface, and lying one over the other; as leaves in the bud.

IMMATE'RIAL, something devoid of matter, or that is pure spirit: thus God, angels, and the human soul are immaterial beings.

IMMER'SION, in astronomy, is when a star or planet is so near the sun with regard to our observations, that we cannot see it, being as it were hidden in the rays of that luminary. It also denotes the beginning of an eclipse of the moon, and of the satellites of Jupiter. The eclipses of the first satellite of Jupiter are much used for discovering the longitude. The immersion of that satellite is the moment in which it appears to enter the disc of Jupiter, and its emersion the moment when it appears to come out.

IMMOLA'TIO, a ceremony used in the Roman sacrifices; it consisted in throwing upon the head of the victim some sort of corn and frankincense, together with the *mola* or salt cake, and a little wine.

IMMORTAL'ITY, the quality of endless duration, as the immortality of the soul. The idea that the dissolution of the body involves the annihilation of existence, is so cheerless, so saddening, that the wisest and best of men, of all ages, have rejected it, and all civilized nations have adopted the belief of its continuation after death, as one of the main points of their religious faith. The Scriptures afford numerous evidences of the soul's immortality; the hope of it is a religious conviction; man cannot relinquish it, without abandoning, at the same time, his whole dignity as a reasonable being and a free agent; and hence the belief in immortality becomes intimately connected with our belief in the existence and goodness of God.

IMMU'NES, in Roman history, an epithet applied to such provinces as had obtained an exemption from the ordinary tribute. The term is also applied to soldiers who were exempt from military service.

IM'PACT, in mechanics, the simple or single act of one body upon another to put it in motion. The *point of impact* is the point or place where the body acts.

IMPA'LE, in heraldry, to conjoin two coats of arms pale-ways, as is the case with those of a husband and wife, is *to impale* them.

IMPA'LEMENT, the putting to death by thrusting a stake through the body, the victim being left to perish by lingering torments. This barbarous mode of torture is used by the Turks, as a punishment for Christians who say any thing against the law of the prophet, who intrigue with a Mohammedan woman, or who enter a mosque.

IMPARISYLLAB'IC, in grammar, an epithet for words having unequal syllables.

IMPAR'LANCE, in law, a privilege or license granted, on petitioning the court for a day to consider or advise what answer the defendant shall make to the plaintiff's declaration.

IMPASTA'TION, the mixture of various materials of different colours and consistencies, baked or bound together with some cement, and hardened by the air or by fire.

IMPA'TIENS, a genus of plants, of which there are twelve species. The *impatiens noli tangere*, common yellow balsam, is an annual plant; during the day the leaves are expanded, but at night they hang pendent, contrary to what is observed in most plants, which, from a deficiency of moisture, or a too great perspiration from heat, commonly droop their leaves in the day-time. When the seeds are ripe, upon touching the capsule they are thrown out with considerable force; hence its name.

IMPEACH'MENT, in law, the accusation brought against a public officer in parliament, for treason or other crimes and misdemeanors. An impeachment by the House of Commons is of the nature of a presentment to the House of Lords, the supreme court of criminal jurisdiction. The articles of impeachment found by the Commons are the same as a bill of indictment, which is to be tried by the Lords.

IMPENETRABIL'ITY, in philosophy, that quality of matter which prevents two bodies from occupying the same space at the same time.

IMPER'ATIVE, in grammar, one of the moods of a verb, used when we would command, exhort, or advise; as *go*, *attend*, &c.

IMPERA'TOR, in Roman antiquity, a title of honour conferred on victorious generals, by their armies, and afterwards confirmed by the senate. After the overthrow of the republic, *imperator* became the highest title of the supreme ruler; and in later times it had the signification which we attach to the word *emperor*.

IMPER'FECT, a tense in grammar, denoting time indefinitely, being neither absolutely past, nor present.——In botany, an epithet for a plant that is deficient in flower, seeds, anther, or stigmas.

IMPE'RIAL, pertaining to an empire. Thus the *imperial chamber*, means the sovereign court of the German empire; an *imperial city*, a city in Germany which has no head but the emperor; the *imperial diet*, an assembly of all the states in the German empire.

IMPE'RIALIST, a subject or soldier of an emperor. The denomination *imperialists*

NO MAN THAT OWNS THE EXISTENCE OF AN INFINITE SPIRIT, CAN DOUBT THE POSSIBILITY OF A FINITE OR IMMATERIAL SPIRIT.

THE IDEA OF A STATE OF RETRIBUTION MAY VERY NATURALLY HAVE GIVEN RISE TO A BELIEF OF THE RESURRECTION OF THE BODY.

A LARGE PORTION OF THE REVENUE OF GREAT BRITAIN IS DERIVED FROM DUTIES ON MERCHANDIZE IMPORTED FROM FOREIGN COUNTRIES.

THE BUSINESS OF IMPORTATION AND EXPORTATION IS SUBJECTED TO VARIOUS REGULATIONS, EMBODIED IN ACTS OF PARLIAMENT.

is often given to the troops or armies of the emperor of Austria.

IMPER'MEABLE, an epithet given to cloth or any other textile fabric, that is rendered water-proof by being steeped in any glutinous solution, or by the process described under Macintosh's patent for applying caoutchouc between two surfaces of cloth.

IMPER'SONAL VERB, in grammar, a verb used only in the third person singular, with *it* for a nominative in English, as *it rains;* and without a nominative in Latin, as *pugnatur.*

IMPETI'GO, in medicine, a name by which the leprosy of the Greeks is sometimes called.——*Impetigo* is also a species of itch, attended with dry scales or scurf, and an uneasy pruriginous itching: hence diseases of this kind are called *impetiginous.*

IMPETRA'TION, in law, the obtaining any thing by request or prayer: but in our old statutes, it is taken for the pre-obtaining of church benefices in this realm, from the court of Rome, which belonged to the disposal of the king and other lay-patrons of the realm.

IM'PETUS, in mechanics, the force with which one body impels or strikes another.

IM'PORTS AND EX'PORTS. Under these appellations are comprised the various commodities brought into this country from abroad, and those home manufactures and products, which, through our commercial relations, we sell, or barter, and send to other countries. The high degree of civilization at which Great Britain has arrived, the surpassing wealth of her aristocracy, her merchants, and manufacturers, together with the increasing demand there is for foreign luxuries furnish a ready mart for almost every description of produce that is not indigenous to her own soil; while, on the other hand, the industry and skill of her artisans, and the rapid strides which science has been making during the present century, particularly in creating machinery, the powers of which strike the common observer as perfectly miraculous, enable her to produce numerous articles of commerce so excellent in their kind as to defy competition. In a notice of this kind it would be ridiculous to attempt an enumeration of the different articles imported, and scarcely less so to name those which are manufactured at home and exported. Formerly woollen goods formed the principal article of native produce exported from Great Britain; and next to it were hardware and cutlery, leather manufactures, linen, tin and lead, copper and brass manufactures, coal, and corn. Now, so prodigious is our cotton manufacture, that the exports of cotton stuffs and yarn amount to about a half of the entire exports of British produce and manufactures. The principal articles of import during the same period have consisted of sugar, tea, corn, timber, and naval stores, cotton wool, sheep's wool, woods and drugs for dyeing, wine and spirits, tobacco, silk, tallow, hides and skins, coffee, spices, bullion, &c. Among a number of extremely sensible remarks on this subject by Mr. M'Culloch, we find the following: "The improvement that has taken place in the mode of living during the last half century has been partly the effect, and partly the cause, of the improvement of manufactures, and the extension of commerce. Had we been contented with the same accommodations as our ancestors, exertion and ingenuity would long since have been at an end, and routine have usurped the place of invention. Happily, however, the desires of man vary with the circumstances under which he is placed, extending with every extension of the means of gratifying them, till, in highly civilized countries, they appear almost illimitable. * * * The lower classes are continually pressing upon the middle; and these, again, upon the higher, so that invention is racked, as well to vary the modes of enjoyment, as to increase the amount of wealth. That this competition should be, in all respects, advantageous, is not to be supposed. Emulation in show, though the most powerful incentive to industry, may be carried to excess; and has certainly been ruinous to many individuals, obliged sometimes, perhaps, by their situation, or seduced by example, to incur expences beyond their means. But the abuse, even when most extended, as it probably is in England, is, after all, confined within comparatively narrow limits, while the beneficial influence resulting from the general diffusion of a taste for improved accommodations adds to the science, industry, wealth, and enjoyments of the whole community." In his remarks on the effects of foreign competition, the same writer forcibly and truly says, "Provided tranquillity be maintained at home, and that Britain continues to be exempted from that political agitation that is the bane of industry and the curse of every country in which it prevails, we have nothing to fear from foreign competition. Our natural and acquired advantages for the prosecution of manufactures and trade, are vastly superior to those of every other country; and though foreigners do excel us in a few departments, and may come to excel us in others, so that the character and channels of our trade may, in consequence, be partially changed, there is not so much as the shadow of a foundation for supposing that its amount will be at all affected. On the contrary, it is all but certain that it will continue to augment with the augmenting wealth and population of the innumerable nations with which we have commercial relations."

IMPO'SE, in printing, to put the pages on the *imposing stone,* and fit on the chase, and thus prepare the form for the press. —In legislation, to lay on a tax, toll, duty, or penalty.——*To impose on,* to mislead by a false pretence.

IMPOSI'TION *of hands,* a religious ceremony, in which a bishop lays his hand upon the head of a person, in ordination, confirmation, or in uttering a blessing. This

practice is also generally observed by the dissenters at the ordination of their ministers, while one prays for a blessing on the labours of him they are ordaining. Imposition of hands was a Jewish ceremony, introduced not by any divine authority, but by custom; it being their practice, whenever they prayed for any person, to lay their hands on his head. Our Saviour observed the same ceremony both when he conferred his blessing on the children, and when he cured the sick.

IMPOS'SIBLE, that which cannot be done or effected. A proposition is said to be *impossible*, when it contains two ideas, which mutually destroy each other, and which can neither be conceived nor united together in the mind: thus, it is impossible that a circle should be a square, or that two and two should make five. A thing is said to be *physically impossible*, that cannot be done by any natural powers, as the resurrection of the dead; and *morally impossible*, when in its own nature it is possible, but attended with difficulties or circumstances which give it the appearance of being impossible.

IM'POST, any tax or tribute imposed by authority; particularly a duty or tax laid by government on goods imported.——In architecture, that part of a pillar in vaults and arches, on which the weight of the building rests; or the capital of a pillar, or cornice which crowns the pier and supports the first stone or part of an arch.

IMPOS'THUME, in surgery, an abscess, or gathering of corrupt matter in any part of the body.

IM'POTENCE, or IM'POTENCY, want of strength or power, animal, intellectual, or moral. The first is a want of some physical principle, necessary to an action; the last denotes the want of power or inclination to resist or overcome habits or natural propensities.

IMPREGNA'TION (applied to animals and plants) the act of fecundating and making fruitful. In botany, to *impregnate* is to deposit the fecundating dust of a flower on the pistils of a plant.——*Impregnation*, in chemistry, is when any body has imbibed so much moisture that it will admit no more.

IMPRESCRIPTIBLE RIGHTS, such rights as a man may use or not at pleasure, those which cannot be lost to him by the claims of another founded on prescription.

IMPRES'SION, in the arts, is used to signify the transfer of engravings from a hard to a soft substance, whether by means of the rolling-press, as in copper-plate and lithographic printing, or by copies in wax, &c. from medals and engraved gems. The word is also used to denote a single edition of a book; as, the whole *impression* of the work was sold in two months.

IM'PRIMIS, (*Latin*) in the first place; first in order.

IMPRIMA'TUR (*Latin*, let it be printed), the word by which the licenser allows a book to be printed, in countries where the censorship of books is rigorously exercised.

IMPROMPTU (from the Latin phrase *in promptu habere*, to have in readiness), without previous study; applied particularly to poetic effusions of the moment.

IMPROPRIA'TION, in law, the act of appropriating or employing the revenues of a church living to one's own use.——*Lay impropriation* is an ecclesiastical living in the hands of a layman. Before the destruction of the monasteries by Henry VIII., in 1539, many livings were in the possession of *impropriators*; the great tithes they kept themselves, allowing the small tithes to the vicar or substitute who served the church. On the suppression of the monasteries, Henry disposed of the great tithings among his favourites.

IMPROVVISATORI, those who compose and recite verses extemporaneously, either accompanying the voice, or not, with an instrument, as is the practice in Italy. This talent of reciting extemporaneous verses appears to be a natural production of the Italian soil, it being no uncommon thing to see two masks meeting during the carnival, and challenging each other in verse, and answering stanza for stanza with genuine humour and poetic feeling. Numerous, indeed, are the instances which might be given of *improvvisatori* and *improvvisatrici*, whose effusions have charmed the ears of monarchs, and excited the admiration of travellers; yet generally, perhaps, their extemporaneous compositions have been within the range of mediocrity. Bouterwek, in his History of Italian Poetry, says, "Among the poetical curiosities of modern Italy, the art of the improvvisatori has higher claims on our attention than most printed collections of Italian poetry. Their art shows with what flexibility and power an Italian fancy, when once excited, can string together words and images in verse. It thus becomes manifest, how an Italian, even with a moderate cultivation of mind, is able to increase, by a little volume of pretty good verses, the number of those which he already finds, when he has once by heart the poetry of his predecessors. The artificial and yet happy enthusiasm of modern *improvvisatori*, is a living monument of the former achievements of Italian intellect."

IM'PULSE, the effect of one body acting on another, or a continuation of motion after the cause is withdrawn; thus, the finger moved against a ball carries the ball a short distance with the finger's velocity, and when the finger is taken away, the motion of the ball continues till the motion imparted to it is destroyed by rubbing or resistance.

INA'LIENABLE, an epithet applied to such things as cannot be legally alienated or made over to another: thus the dominions of a sovereign, the revenues of the church, the estates of a minor, &c. are *inalienable*, otherwise than with a reserve of the right of redemption.

INAUGURA'TION, the act of inducting into office with solemnity, as the coronation of an emperor or king, or the consecration

"THOSE WHO ASSERT THE IMPOSSIBILITY OF SPACE EXISTING WITHOUT MATTER," AS LOCKE OBSERVES, "MUST MAKE A BODY INFINITE."

SEVERAL ITALIAN POETS, BOTH MALE AND FEMALE, OF THE PRESENT DAY, ARE GREAT ADEPTS IN THE ART OF EXTEMPORANEOUS COMPOSITION.

AT AN INCIDENCE OF SEVENTY-FIVE DEGREES, GLASS REFLECTS 628 RAYS IN 1000, AND A METALLIC MIRROR BUT 561.

of a prelate; so called from the ceremonies used by the Romans, when they were received into the college of augurs.

IN'CA, the name or title given by the natives of Peru to their kings and to the princes of the blood, before the conquest of that country by the Spaniards.

INCANDES'CENCE, the glowing whiteness of a metallic or other body caused by intense heat.

INCARNA'TION, in theology, the act whereby the second person of the Holy Trinity assumed the human nature, viz. a true body and reasonable soul, in order to accomplish the redemption of fallen mankind.——In surgery, the process of healing wounds, and filling the part with new flesh.

INCAR'NATIVES, in surgery, medicines which assist nature in healing wounds.

IN'CENSE, in the materia medica, a dry resinous substance, known by the name of *thus* and *olibanum*. The burning of incense made part of the daily service of the Jewish temple; and in the Romish church it is the deacon's office to *incense* the officiating priest or prelate, and the choir. In the religious rites of heathen nations, too, the odours of spices and fragrant gums were burnt as incense.——*Incensed*, in heraldry, an epithet for panthers when represented with fire issuing from their mouths and ears.

INCEP'TIVE, in grammar, an epithet for verbs which express a proceeding by degrees in an action.——*Inceptive magnitudes*, in geometry, such moments or first principles as, though of no magnitude themselves, are yet capable of producing such.

IN'CIDENCE, the angle formed by the perpendicular to any surface, and the direction with which any elastic body strikes the surface.——In optics, when rays of light striking a body are reflected, the angle of incidence and the angle of reflection are equal. The *line of incidence* is that line in which light is propagated from a radiant point to a point in the surface of the speculum, otherwise called the *incident ray*.

IN'CIDENT, in law, something that inseparably belongs to another: thus, a court baron is incident to a manor.

INCIP'IENT, commencing: as the *incipient* stage of a fever.

INCI'SORS, the name given to the four front teeth of both jaws, because they cut the food.

INCIV'ISM, unfriendliness to the state or government of which one is a citizen.

INCLINA'TION, a word frequently used by mathematicians, signifying the mutual approach, tendency, or leaning of two lines, or two planes towards each other, so as to make an angle.——*Inclination of a right line to a plane*, is the acute angle which that line makes with another right line drawn in the plane through the point where the inclined line intersects it, and through the point where it is also cut by a perpendicular drawn from any point of the inclined plane.——*Inclination of the axis of the earth*, is the angle which it makes with the plane of the ecliptic; or the angle contained between the planes of the equator and ecliptic.——*Inclination of a planet*, is an arch of the circle of inclination, comprehended between the ecliptic and the plane of a planet in its orbit.

INCLI'NED PLANE, in mechanics, a plane inclined to the horizon, or making an angle with it, which is one of the three mechanical powers. The wedge is a modification of this machine, being formed of two inclined planes placed base to base. The screw is another modification, being, in fact, merely an inclined plane wound round the cylinder. Its common application is to elevate bodies, which are raised perpendicularly while they are moved up the plane, and the force gained is as the increased distance moved over, that is, as the length of the inclined plane is to the perpendicular height gained.

INCOG'NITO, (abbreviated to *incog.*) unknown, or so disguised as not to be recognised; a mode of travelling without any mark of distinction, which is sometimes adopted by princes and great people who do not wish to be recognised.

INCOMBUS'TIBLE, a body which is not decomposed, or combined, during the mechanical action which takes place between hydrogen and oxygen, or their compounds, in the process called combustion.——*Incombustible cloth*, a sort of linen cloth made from a stone in the form of a talc; which stone is called *lapis amianthus*, and *asbestos*.

INCOMMEN'SURABLE, in geometry, a term applied to two lines or quantities which have no common measure by which they can be exactly divided. Quantities are *incommensurable*, when no third quantity can be found that is an aliquot part of both.

INCOMPAT'IBLE, in a general sense, morally inconsistent; or that cannot subsist with another, without destroying it: thus, truth and falsehood are essentially *incompatible*: so cold and heat are *incompatible* in the same subject, the strongest overcoming and expelling the weakest. In a legal sense, that is *incompatible* which cannot be united in the same person, without violating the law or constitution.

INCON'TINENCE, or INCON'TINENCY, in a medical sense, the inability of any of the animal organs to restrain discharges of their contents, or the involuntary discharge itself; as, an *incontinence* of urine in diabetes.

INCORPORA'TION, in law, the formation of a legal or a political body, with the quality of perpetual existence or succession, unless limited by the act of incorporation.——*Incorporation*, in chemistry, the mingling the particles of different bodies together into one mass, in such manner that the different ingredients cannot be distinguished.

INCRAS'SATE, in pharmacy, to make fluids thicker by the mixture of other substances less fluid, or by evaporating the thinner parts.——*Incrassated*, in botany, becoming thicker towards the flower, as a peduncle.

BODIES WHICH REFRACT MOST REFLECT MOST; THE LOCAL ATMOSPHERE WHICH INCREASES ONE INCREASES THE OTHER.

INCREMENT, in mathematics, the quantity by which a variable quantity increases.

INCRESCENT, in heraldry, an epithet applied to the moon when she is in her increase.

INCRYSTALIZABLE, of a nature incapable of being formed into crystals.

INCUBATION, the process of a bird sitting on eggs and hatching its young: the time required for this varies in different birds, domestic fowls sit three weeks, ducks, geese, and turkeys a month; pigeons, eighteen days, &c. All known birds, with the exception of the cuckoo, discharge this office themselves; and the perseverance and devotion of the female during incubation is admirable. The gradual development of the young bird in the egg has been observed, particularly in the case of the eggs of the domestic hen; and it is wonderful to observe the care with which the parent attends to its wants, and gives it the warmth of her sheltering wings, until the down which at first covers its body is superseded by feathers, and it becomes gradually accustomed to the external air. ——*Artificial Incubation* is carried to a high degree of perfection both in Egypt and in China; and of late we have had opportunities of witnessing the process in London. It can be effected by means of an oven, a furnace, or by steam.

INCUBUS, or *Nightmare*, the name of a disease which consists in a spasmodic contraction of the muscles of the breast, usually happening in the night, and attended with a very painful difficulty of respiration and great anxiety. The most obvious symptom of this disease is a sensation of some great weight laid upon the breast. Sometimes the sufferer finds himself in some inextricable difficulty, endeavouring to escape from a monster, or, perhaps, in imminent danger of falling from a precipice, while his limbs refuse to do their office, until he suddenly awakens himself by starting from his recumbent posture, or by a cry of terror. It is generally owing to repletion and indigestion, and is often superinduced by lying on the back.

INCUMBENT, the person who is in present possession of an ecclesiastical benefice.

INCUS, in anatomy, the largest and strongest of the bones in the tympanum of the ear, so called from its resembling an anvil (*incus*) in shape.

INDEFEASIBLE, in law, an epithet for an estate, or any right which cannot be defeated or made void.

INDEFINITE, or INDETERMINATE, that which has no certain bounds; or to which the human mind cannot affix any. Descartes makes use of this word in his philosophy instead of *infinite*, both in numbers and quantities, to signify an inconceivable number, or a number so great as not to be capable of any addition.——*Indefinite*, is also used to signify a thing that has but one extreme; for instance, a line drawn from any point and extended infinitely.——*Indefinite*, in grammar, is understood of nouns, pronouns, verbs, participles, articles, &c. which are left in an uncertain indeterminate sense, and not fixed to any particular time, thing, or other circumstance.

INDEMNITY, in law, a writing to secure one from all damage and danger that may ensue from any act.——*Act of Indemnity*, an act passed every session of parliament for the relief of those who have neglected to take the necessary oaths, &c.

INDENTED, in heraldry, an epithet for a line which is notched or cut in like the teeth of a saw.

INDENTURE, in law, a writing containing an agreement or contract made between two or more persons; so called because it was indented or cut scollopwise, so as to correspond with another writing containing the same words. But *indenting* is often neglected, while the writings or counterparts retain the name of *indentures*.

INDEPENDENTS, a sect of Protestant dissenters, distinguished, not by doctrine, but discipline. They regard every congregation of Christians, meeting in one building for the purpose of public worship, as a complete church, *independent* of any other religious government; and they reject the use of all creeds, as impious substitutes for the letter of the Scripture. The direction of each church is vested in its elders. The *Independents* arose in the reign of Elizabeth; and during the civil wars of England, in the 17th century, they formed a powerful party.

INDETERMINATE QUANTITY, in mathematics, a quantity which has no certain or definite bounds.——*Indeterminate Analysis*, that particular branch of analysis which treats of the solution of *indeterminate problems*, or such problems as admit of innumerably different solutions.

INDEX, in arithmetic and algebra, the number that shows to what power the quantity is to be raised; the exponent.——*Index*, in literature, an alphabetical table of the contents of a book.——*Index of a globe*, the little style, or gnomon, which being fixed on the pole of the globe, and turning round with it, points to certain divisions of the hour circle.——*Expurgatory Index*, a catalogue of prohibited books in the church of Rome.

INDIA-RUBBER. [See CAOUTCHOUC.]

INDIAN INK, a substance brought from China, used for water-colours. It is in rolls or in square cakes, and is said to consist of lamp-black and animal glue.

INDIANITE, a mineral, of a white or gray colour, occurring in masses having a foliated structure and shining lustre.

INDIAN RED, a species of ponderous earth, of a fine purple colour, and of a firm compact texture.

INDICATIVE, in grammar, the first mood, or manner, of conjugating a verb, by which we simply affirm, deny, or indicate something; as, he *writes*; they *run*.

INDICTION (CYCLE OF), in chronology, a mode of computing time by the

FROM TIME IMMEMORIAL THE EGYPTIANS HAVE BEEN ACCUSTOMED TO HATCH EGGS BY ARTIFICIAL HEAT IN STOVES OR OVENS.

ARTIFICIAL INCUBATION IS SOMETIMES EFFECTED BY MEANS OF WARM BATHS, PARTICULARLY WHERE NATURAL HOT SPRINGS EXIST.

space of fifteen years, instituted by Constantine the Great; originally the period for the payment of certain taxes. The popes, since the time of Charlemagne, have dated their acts by the year of the indiction, which was fixed on the 1st of January. At the time of the reformation of the calendar, the year 1582 was reckoned the tenth year of the indiction. Now this date, when divided by 15, leaves a remainder, 7, that is, three less than the indiction, and the same must necessarily be the case in all subsequent cases; so that, in order to find the indiction for any year, divide the date by 15, and add 3 to the remainder. It has no connexion with the motions of the heavenly bodies.

INDI'CTMENT, in law, a written accusation of one or more persons for a crime or misdemeanor, preferred to, and presented on oath by a grand jury. In determining whether there is a reasonable cause to put the accused upon his trial, the grand jury hear evidence only of the charge; and if twelve of them are satisfied of the truth of the charge, the indictment is then said to be found, and is publicly delivered into court.

IN'DICOLITE, in mineralogy, a variety of shorl or tourmalin, of an indigo or blue colour, sometimes tinged with green or azure.

INDI"GENOUS, an epithet denoting the native production of a country, in harmony with its climate, soil, and other productions: *not exotic*, when applied to plants.

IN'DIGO, a most valuable substance or dye, (known to the ancients under the name of *indicum*,) prepared from the leaves and stalks of the indigo-plant, which are steeped in water till the pulp is extracted, when the tincture is drawn off and agitated, till the dye begins to granulate. The flakes are then left to settle; the liquor is drawn off, and the indigo is drained in bags and dried in boxes. Indigo, as found in commerce, is in the form of little square or oblong cakes; it is of a dark-blue colour, passing into violet-purple, is void of taste and smell, dull, but by rubbing with a smooth hard body, it assumes the lustre and hue of copper. Sulphuric acid is the only agent that dissolves indigo without destroying its colour. When it is put into this acid, a yellow solution is at first formed, which, after a few hours, acquires a deep blue colour. Indigo may be said to be a rare production of the vegetable kingdom, it hitherto having been found only in a small number of species belonging to the genera *indigofera*, *isatis*, and *nerium*; but it is almost exclusively from the first of these that the indigo of commerce is extracted. The species of *indigofera* are leguminous plants, herbaceous or shrubby, with alternate and generally pinnate leaves, and small blue, purple, or white flowers. It is computed that British India supplies three-fourths of all the indigo brought into European markets.

INDIGOF'ERA, Indigo, in botany, a genus of plants, class 17 *Diadelphia*, order 4 *Decandria*. The species are shrubs, from some of which the indigo of commerce is obtained. [See Indigo.]

INDIVID'UUM, in physiology, a body or particle, so small that it cannot be divided.

INDIVIS'IBLES, in geometry, such elements or principles as any body or figure may be supposed to be ultimately resolved into.

INDORS'ER, he who writes his name on the back of a bill of exchange. That which is written on the back is called the *indorsement*; and the person to whom the bill is assigned by indorsement, is the *indorsee*.

INDUC'TION, in logic, a process of reasoning, by which we draw a general reference from a number of facts; contrasted with *deduction*, which applies to an inference from a single fact.——*Induction*, in law, the introduction of a clergyman in possession of a benefice or living to which he is collated, or presented. Induction is performed in the following manner: the clergyman commissioned takes the minister to be inducted by the hand, lays it upon the key of the church, the latch of the churchgate, or on the church wall, and pronounces these words, "By virtue of this commission, I induct you into the real and actual possession of the rectory of, &c. with all its appurtenances." Then, opening the church door, he puts the clergyman in possession. Induction may also be made by delivery of a clod or turf of the glebe.

INDUL'GENCE, in the Roman Catholic church, a remission of the punishment due to sins, granted by the pope or church, and supposed to save the sinner from purgatory. Clement VI. in his decretal, declares, that our Saviour has left an infinite treasure of merits, arising from his own sufferings, besides those of the Blessed Virgin and the saints; and that the pastors and guides of the church, and more especially the popes, who are the sovereign disposers of this treasure, have authority to apply it to the living, by virtue of the keys, and to the dead, by way of suffrage, to discharge them from their respective proportions of punishment, by taking just so much merit out of this general treasure, as they conceive the debt requires, and offering it to God. The historical origin of indulgences is traced to the public penances and the canonical punishments which the old Christian church imposed on the community, especially on those who did not remain firm unto martyrdom. When ecclesiastic discipline became milder, and the clergy more covetous, it was allowed to commute these punishments into fines, for the benefit of the church. In the pontificate of Leo. X. the flagrant abuse of indulgences became an open scandal: as the building of St. Peter's church had exhausted his finances, he began the sale of them in Germany, without waiting for the jubilee of 1525 (for during the period of jubilee the people were taught to believe that the efficacy of indulgences was doubled, and consequently the richest harvests were always reaped at that time). This first in-

THAT PART OF THE INDIGO PLANT WHICH YIELDS THE COLOURING SUBSTANCE IS CONFINED ENTIRELY TO THE PELLICLE OF THE LEAVES.

WITH SULPHATE OF INDIGO, BLUES OF EVERY SHADE ARE DYED, AND ALSO GREENS, OLIVES, GRAYS, AND FAST GROUNDS TO LOGWOOD BLUES.

flamed the zeal of Luther; and to it may the reformation in Germany be mainly ascribed.

INDUL'TO, in ecclesiastical affairs, an Italian term for a dispensation granted by the pope, to do or obtain something contrary to the common law.

INER'TIA, or VIS INER'TIÆ. [See the conclusion of the article GRAVITATION.]

INESCUTCH'EON, in heraldry, a small escutcheon borne within the shield.

IN ES'SE (*Latin*) actually existing; distinguished from *in posse*, which denotes that a thing is not, but may be.

IN'FAMY, in law, that total loss of character or public disgrace which a convict incurs, and by which a person is rendered incapable of being a witness or a juror.

IN'FANCY, the period, physically considered, from birth to seven years, and legally, till 21, previously to which no one can inherit or execute any obligation, or incur any responsibility except for necessaries.

INFANT'E, and INFANT'A, appellations severally given to all the sons and daughters of the kings of Spain and Portugal, except the eldest. The dignity of the title consists in the pre-eminence implied by styling the children of the king, *the* children.

IN'FANTRY, in military affairs, the whole body of foot-soldiers, as distinguished from *cavalry*. The infantry are pre-eminently the moral power of armies; and on no class of troops has a general, who knows how to act on his soldiers, such influence. Infantry is divided into *light infantry* and that of *the line*. The latter forms the great mass, which is intended to fight in line, to decide attacks by the bayonet, and to make assaults. The light infantry is particularly intended to serve in the outposts, to act as sharp-shooters, to make bold expeditions, and harass and disquiet the enemy. Infantry is divided into battalions, companies, and platoons. The excellence of infantry depends on their good order in advancing and retreating, perfect acquaintance with their exercise and duties, in a just application of their fire, and great calmness both in assaulting and when assaulted in the square. The term *infantry* is said to have been derived from an event in Spanish history. An infanta of Spain, learning that the army commanded by her father had been defeated by the Moors, assembled a body of foot soldiers, and, with these, engaged, and totally defeated the enemy. This success raised the foot soldiers into a degree of estimation in which they had never before been held, and caused them to be, thenceforward, distinguished by the name of the character under whom this honourable distinction was gained.

INFEC'TION, the morbid effluvia of one body affecting the similar organs of another body, as small-pox, putridity, &c.; but it has been questioned whether this effect can be carried from place to place, and whether most diseases, called infectious, are not occasioned by local circumstances which affect certain subjects in the population. The *infection* of the plague and of the yellow fever, is said to be imported in ships and conveyed in clothing; persons are also said to take the *infection* from a diseased person, or from the air of apartments where the sick are confined.

INFER'NAL MACHINE, a name which has been given on more than one occasion to a terrific engine invented for the base purpose of assassination, the most memorable of which is here briefly recorded: On the 28th of July, 1835 (the day on which the commemoration of "The Three Glorious Days of July" annually takes place in Paris), as Louis Philippe, with his three sons and a numerous suite were riding along the Boulevard of the Temple, reviewing the national guards, they were fired at from a window of the second floor of a house in that neighbourhood. The king and his sons escaped, but sixteen persons were killed and eighteen wounded. Among the former were the duke of Treviso, colonels Rieussec and Lachasse, and four grenadiers of the national guard; and among the latter, four generals, all dangerously wounded. The *infernal machine* which caused the slaughter consisted of a number of gun-barrels, so arranged on a frame, as to be fired off in a volley; and the name of the wretch who executed it was Fieschi, by birth a Corsican, who was wounded by some of the barrels exploding, and, being immediately taken, was subsequently executed.

INFEODA'TION *of tithes*, in law, the granting of tithes to mere laymen.

INFE'RIÆ, in Roman antiquity, sacrifices offered to the infernal deities for the souls of the departed.

IN'FIDEL, one who disbelieves the inspiration of the Scriptures, or the divine original of Christianity.

INFILTRA'TION, the act or process of entering the pores or cavities of a body.

IN'FINITE. In mathematics, *infinite quantities* are such quantities as are either greater or less than assignable ones. And *infinite series*, a series considered as infinitely continued as to the number of its terms.

INFINITES'IMAL, a term denoting an indefinitely small quantity.

INFIN'ITIVE, in grammar, a mood expressing the action of the verb, without limitation of person or number, as *to love*.

INFIN'ITY, a term applied to the vast and the minute, to distances and spaces too great to be expressed in any numbers of measures, or too small to be expressed by any fraction; and one of the incomprehensible, but necessarily existing wonders of the universe. We apply *infinity* to God and his perfections. We speak of the infinity of his existence, his power, and his goodness.

INFIR'MARY, a charitable establishment where the poor may receive medical advice and medicines gratis.

INFLAMMA'TION, in medicine, a genus of disease in the class *pyrexiæ*, and order *phlegmasiæ*, of Cullen. It is characterised

WHOEVER CAUSED THE CAPITAL CONVICTION OF A FELON, FORMERLY RECEIVED FORTY POUNDS, AND WAS EXEMPTED FROM PAROCHIAL OFFICES.

by heat, pain, redness, attended with more or less of tumefaction and fever. Inflammation is divided into two species, viz. *phlegmonous* and *erysipelatous*; the former known by its bright red colour, tension, heat, and painful tumefaction; the latter by its dull red colour, vanishing upon pressure, and the tumour scarcely perceptible. Besides this division, inflammation is either acute or chronic, local or general, simple or complicated with other diseases.

INFLECTED, in botany, an epithet for a leaf that is bent inwards at the end towards the stem: also for a calyx that is bent inwards.

INFLECTION, in optics, the bending or refraction of the rays of light, caused by the unequal thickness of any medium.——*Inflection*, in grammar, the change which a word undergoes in its termination, to express case, number, gender, mood, tense, &c.——*Point of Inflection*, in geometry, that point in which the direction of a curve changes from concavity to convexity, and *vice versâ*.

INFLORESCENCE, in botany, the manner in which plants flower, or in which flowers are attached to the stem by means of the peduncle

INFLUENZA (Italian, *influence*), in medicine, an epidemic catarrh, which has, at various times, spread over vast tracts of country. The French call it *la grippe*. In 1802 an influenza of this kind attracted universal attention, it having first appeared on the frontiers of China, and ultimately traversed the whole of the European continent. No sex, age, or state of health was exempted. It showed itself chiefly as a severe cold, attended with a catarrhal fever of a more or less inflammatory or bilious character; but though it was generally attended with much subsequent debility, it did not often terminate fatally. The term is often, but erroneously, applied to other kinds of epidemic diseases.

INFORMATION, in law, an accusation or complaint exhibited against a person for some criminal offence. An information differs from an indictment, inasmuch as the latter is exhibited on the oath of twelve men, but the information is only the allegation of the individual who exhibits it.—He who communicates to a magistrate a knowledge of the violations of law, is an *informer*: but he who makes a trade of laying informations, is termed a *common informer*, and is generally held in disesteem by society.

INFORMIS *(Latin)*, something irregular in its form or figure. Hence, *stellæ informes*, in astronomy, are such of the fixed stars as are not reduced into any constellation.

INFRALAPSARIANS, in church history, an appellation given to such predestinarians as think the decrees of God, in regard to the salvation and damnation of mankind, were formed in consequence of Adam's fall.

INFRASCAPULARIS, in anatomy, one of the depressor muscles of the arm, which has its origin from the whole internal surface of the *scapula*, and its termination in the interior part of the *humerus*.

INFRASPINATUS, in anatomy, one of the abductor muscles of the arm, which has its origin in the cavity below the spine of the *scapula*.

INFULA, in Roman antiquity, a broad kind of fillet, made of white wool, which the priests used to wear round their heads. At later periods, the imperial governors wore the *infula* as a sign of dignity, and, as such, it was adopted, in the 7th century, by the bishops of the Roman Catholic church, who continue to wear it on solemn occasions. It is, in fact, the *mitre*; which the bishops of the church of England have in their coat of arms, but never wear it on the head.

INFUNDIBULIFORM, in botany, having the shape of a funnel, as a flower with a conical border rising from a tube.

INFUNDIBULUM *Cerebri*, in anatomy, a cavity of the brain, through which serous humours are discharged.

INFUSION, in pharmacy, a method of obtaining the virtues of plants, roots, &c. by steeping them in a liquid. Also the liquor in which the plants are steeped, and which is impregnated with their virtues or qualities.

INFUSORIA, in entomology, the fifth order of the class *Vermes*, consisting of insects too small to be seen by the naked eye, and found in fermenting liquids, as vinegar, stagnant water, &c. This order is scarcely distinguished from the *Intestina* and *Mollusca*, but by the minuteness of the individuals belonging to it, and their spontaneous appearance in animal and vegetable infusions. The process by which their numbers are increased is no less astonishing than their first production. Several of the genera often seem to divide themselves into two or more parts, and become new and distinct animals.

INGOT, a small bar of metal made of a certain form and size, by casting it in moulds. The term is chiefly applied to the small bars of gold and silver, intended either for coining or for exportation to foreign countries.

INGRAILED, in heraldry, an epithet for one of the crooked lines of which the ordinaries are composed, having its convex part outward, in distinction from the *invecked*, which has the convex part inward.

INGRESS, in astronomy, a term applied to the entrance of the moon into the shadow of the earth in eclipses, the sun's entrance into a sign, &c.

INGRESS, EGRESS, and REGRESS, in law, words frequently used in leases of lands, which signify a free entry into, a going out of, and returning from some part of the premises leased to another.

INGRESSU, in law, a writ of entry, termed also a *præcipe quod reddat*.

INGRESSUS, in law, a duty which the heir at full age formerly paid to the chief lord for entering upon lands which had fallen to him.

INGUINAL, in anatomy, &c. any thing belonging to the groin. Hence *Inguinal*

UNDER THE OLD SYSTEM THE POLICE OFFICERS SEDUCED MANY POOR AND IGNORANT VICTIMS INTO THE COMMISSION OF FELONY.

Hernia is a hernia in that part, called by surgeons *bubonocele*.

INHE'RENT, that which is inseparable, distinguished from the accidental and acquired; as the *inherent* qualities of the magnet, &c.

INHERITANCE, a perpetual right or interest in an estate, invested in a person and his heirs. The term inheritance is used, not only where a person has lands or tenements by descent; but where he becomes seized in fee-simple, or fee-tail, by purchase. The inheritances mentioned in our law are either corporeal or incorporeal: the *corporeal* relate to lands, tenements, &c. that may be touched or handled; and the *incorporeal*, to such rights as are annexed to corporeal inheritances, as advowsons, tithes, annuities, offices, &c. There is likewise another inheritance, which is termed *several*, that is, where two or more hold lands or tenements severally; as when two persons hold to them and the heirs of their two bodies; in which case these two have a joint estate during their lives, but their heirs have several inheritances. According to the law of inheritances, the first child is always preferred, and the male before the female; and he that has the whole blood, before another that has only a part of the blood of his ancestor. Goods and chattels cannot be turned into an inheritance.

INHIBI'TION, in law, a writ to forbid a judge's proceeding in a cause that lies before him. This writ generally issues out of a higher court to an inferior, and is of much the same nature as a prohibition.

INHUMATION, in medicine, the term for burying a patient in warm or medicated earth.—In chemistry, a digestion made by burying the materials in dung or earth.

INJECTION, in anatomy, the act of filling the vessels of a dead subject with any coloured matter to show their ramifications.——*Injection*, in surgery, the forcing any liquid into the body by means of a syringe or pipe.

INJUNCTION, in law, a writ or prohibition granted in several cases; and for the most part grounded on an interlocutory order or decree, made in the court of chancery or exchequer, for staying proceedings either in courts of law, or ecclesiastical courts. When the reason for granting an injunction ceases, the injunction is dissolved.

IN'JURY, in a legal sense, any wrong or damage done to another, either in his person, rights, reputation, or goods. Whatever impairs the quality or diminishes the value of goods or property, is an *injury*; so also whatever impairs the health, weakens the mental faculties, or prejudices the character of a person, is an *injury*.

INK, a liquid used to write with. Black writing-ink is usually made of galls, copperas, gum-arabic, and water. The basis of common writing-ink, is the fine black, or dark blue precipitate formed by the soluble part of the gall-nut, and a solution of the sulphate of iron, or copperas. This precipitate is kept suspended by means of gum-arabic.——*Red Ink* is composed of Brazil wood, gum, and alum.——*Copying Ink*. Sugar mixed in ink prevents it from drying; this property renders it easy to take off an impression of any writing, and in this way letters, &c. are copied in merchants' counting-houses. The writing is to be made with ink containing sugar, and when done it is laid on the copying press, a blank sheet of proper paper damped is put over it, and by the pressure of the machine a fac-simile is struck off. On common occasions the impress may be made with a hot flat iron being passed over instead of the press.——*Sympathetic Ink*. Among the amusing experiments of the art of chemistry, the exhibition of sympathetic inks holds a distinguished place. With these the writing is invisible until some re-agent gives it opacity. We shall here mention a few out of a great number that a slight acquaintance with chemistry may suggest to the student. 1. If a weak infusion of galls be used, the writing will be invisible till the paper be moistened with a weak solution of sulphate of iron. It then becomes black, because these ingredients form ink. 2. If paper be soaked in a weak infusion of galls, and dried, a pen dipped in the solution of sulphate of iron will write black on that paper, but colourless on any other paper. 3. The diluted solutions of gold, silver or mercury, remain colourless upon the paper, till exposed to the sun's light, which gives a dark colour to the oxydes and renders them visible. 4. Most of the acids or saline solutions being diluted, and used to write with, become visible by heating before the fire, which concentrates them, and assists their action on the paper. 5. Diluted prussiate of potash affords blue letters when wetted with the solution of sulphate of iron. 6. The solution of cobalt in aqua regia when diluted, affords an ink which becomes green when held to the fire; but disappears again when suffered to cool: and 7. The oxyde of cobalt dissolved in acetous acid, and a little nitre added, will exhibit a pale rose colour when heated, which disappears when cold.——*Indelible Ink*. In a paper lately read before the Royal Society of Edinburgh, Dr. Traill, after an account of many unsuccessful experiments to produce a durable ink from metallic combinations, stated that he had attempted the composition of a carbonaceous liquid, which should possess the qualities of good writing ink. The inks used by the ancients were carbonaceous, and have admirably resisted the effects of time; but it was found that the specimens of writing on the Herculaneum and Egyptian *papyri* were effaced by washing with water. The result of Dr. Traill's experiments was, that he had obtained a fluid capable of readily uniting with carbon into a good durable ink, by a solution of the gluten of wheat in pyroligneous acid. The gluten is to be separated from the starch as much as possible, and dissolved in pyroligneous acid with the aid of heat. This forms a saponaceous fluid, which is to

INK, THOUGH PALE WHEN FIRST WRITTEN WITH, BECOMES BLACK ON EXPOSURE TO THE AIR, THE COPPERAS ACQUIRING MORE OXYGEN.

ONE OF THE BEST SUBSTANCES FOR DILUTING INK IS A STRONG DECOCTION OF COFFEE; IT ALSO IMPROVES ITS COLOUR AND LUSTRE.

be tempered with water until the acid has the usual strength of vinegar; and then with each ounce of this fluid are to be ground from eight to ten grains of the best lamp-black, and one grain and a half of indigo. This ink is described as being of a good colour, flowing freely from the pen, drying quickly, not being affected by soaking in water, and remaining indelible although immersed in chemical solutions which efface common ink.

IN'LAND, in law, that part of any land or mansion which lay next to the mansion-house, and was used by the lord himself.—In geography, that which is situated in the interior of a country remote from the sea-coast.——*Inland Bills*, in commerce, bills payable in the country where they are drawn.

INLAY'ING, the art of diversifying cabinet-work, or working in wood or metal with several pieces of different colours, curiously put together.

IN LIM'INE, (*Latin*) in the outset; before any thing is said or done.

IN'NATE IDE'AS, in mathematics, principles or ideas supposed to be stamped on the mind from the first moment of its existence, and which it constantly brings into the world with it: a doctrine which has given rise to much discussion, and which the celebrated Locke took great pains to refute.

IN'NOCENTS' DAY, a festival observed in the church on the 28th of December, in memory of the children that were slain by command of Herod.

INNS OF COURT, houses or colleges where students in the law reside and are instructed. The principal of these societies at present are Lincoln's Inn, the Inner Temple, the Middle Temple, and Gray's Inn.——*Inns of Chancery*. These were probably so called because anciently inhabited by such clerks as chiefly studied the forming of writs, which regularly belonged to the cursitors, who are officers of chancery. These are Thavie's Inn, the New Inn, Symond's Inn, Clement's Inn, Clifford's Inn, Staple's Inn, Lyon's Inn, Furnival's Inn, and Bernard's Inn. These were formerly preparatory colleges for younger students, and many were entered here before they were admitted into the inns of court. At the present day, previously to being called to the bar, it is necessary to be admitted a member of one of the inns of court.

INOCULA'TION, in surgery, the operation of giving the small-pox to persons by incision. Inoculation is generally thought to have been introduced into Britain from Turkey by Lady Mary Wortley Montague, about the year 1721, her son having been inoculated at Constantinople, during her residence there, and her infant daughter being the first that underwent the operation in this country. It appears, however, to have been well known before this period both in the south of Wales and Highlands of Scotland. It is not clearly ascertained where inoculation really originated. It has been ascribed to the Circassians, who employed it as the means of preserving the beauty of their women; but it appears more probable that accident first suggested the expedient among different nations, to whom the small-pox had long been known, independently of any intercourse with each other.—We may here observe, that at this moment the most laudable efforts are being made by our government, at the recommendation of a vast body of eminent and influential members of the medical profession, to encourage the practice of vaccination, and thereby to eradicate a disease which is justly described as one of the most dreadful scourges of the human race. When a person is inoculated with the cow-pox, it is called vaccination. [See Cow-pox.]——*Inocula'tion*, in gardening, a kind of grafting in the bud; as when the bud of the fruit tree is set in the stock or branch of another, so as to make several sorts of fruit grow on the same tree. The time to *inoculate* is when the buds are formed at the extremities of the same year's shoot, indicating that the spring growth for that season is complete.

INOR'DINATE *proportion*, in geometry, that in which the order of the terms compared is irregular or disturbed.

INORGAN'IC BODIES, such as have no organs, as the various kinds of minerals.

INOSCULA'TION, in anatomy, the joining the mouths of the capillary veins and arteries, by means of which the circulation of the fluids is carried on.

IN PRO'PRIA PERSO'NA *(Latin)*, in one's own person or character.

IN'QUEST, judicial inquiry. It may either be a jury to decide on the guilt of an accused person, according to fact and law; or to examine the weights and measures used by shopkeepers; decide on the cause of any violent or sudden death; or to examine into accusations before trial.

INQUI'RY, *writ of*, in law, a writ that issues out to the sheriff to summon a jury to inquire what damages a plaintiff has sustained in an action upon the case where judgment goes by default.

INQUISI'TION, Office of the, an ecclesiastical court founded by Innocent III., who, in the twelfth century, sent Father Dominic and others, to excite the Catholic princes and people to extirpate heretics, to inquire into their number and quality, and to transmit a faithful account of these particulars. From the nature of their office, these agents were called *inquisitors*; and thus arose a tribunal which was received in all Italy, and throughout the dominions of Spain, excepting the kingdom of Naples and the provinces of the Netherlands. The principle of jurisprudence upon which the Inquisition proceeded was that of taking no other proof of a delinquent's guilt than his own confession. He was closely confined in a dark and dismal cell, where he was compelled to sit motionless and silent, and if his feelings found vent in a tone of complaint, the ever-watchful keeper warned him to be silent. He was accused of no specific charge; but told that

ALL INSECTS WHICH LIVE IN SOCIETY, WHEN EXPOSED TO COLD, ARE OBSERVED TO CLUSTER TOGETHER, AS IF TO KEEP EACH OTHER WARM.

his guilt was known, and required to acknowledge it. If he confessed the crime of which he was accused, he pronounced his own sentence, and his property was confiscated. If he declared himself innocent, contrary to the testimony of the witnesses, he was threatened with torture. When sentence of death was pronounced against the accused, the holy *auto da fè* was ordered. At day-break the solemn sound of the great bell of the cathedral called the faithful to the dreadful spectacle. The condemned appeared barefooted clothed in the dreadful *san-benito*, with a conical cap on their heads. The Dominicans, with the banner of the Inquisition, led the way. Then came the penitents, who were to be punished by fines, &c., and after the cross, which was borne behind the penitents, walked the unfortunate wretches who were condemned to be burnt alive. The dreadful procession was closed by monks and priests, and the *heretics* were then handed over to the executioner, who finished the horrid spectacle, in the presence of the multitudes, who assembled in throngs to witness the agonies in the victims! According to the estimate in Llorente's History of the Spanish Inquisition, the number of victims, from 1481 to 1808, amounted to 341,021. Of these, 39,912 were burnt, 17,659 burnt in effigy, and 291,456 were subjected to severe penance. The Inquisition had been abolished during the French rule in Spain; it was re-established by Ferdinand VII. in 1814; but on the adoption of the constitution of the cortes in 1820, it was again abolished.

INQUIS'ITOR, in law, any officer, as the sheriff and the coroner, having power to inquire into certain matters.——*Grand Inquisitor* is the name given to a judge of the Inquisition.

INROLLMENT, in law, the registering or entering in the rolls of the Chancery and Queen's Bench, &c. any lawful act, as recognizances, &c.

INSAN'ITY, mental derangement of any degree, from slight delirium to raving madness. It is, however, rarely used to express temporary delirium occasioned by fever, &c.

INSCRI'BE, to engrave on a monument, pillar, &c.; or to commend by a short address, less formal than a dedication; as, to *inscribe* an ode or book to a prince.——*Inscribed*, in geometry, an epithet for a figure inscribed in another, so that all its angles touch the sides or planes of the other figure.

INSCRIP'TI, in Roman antiquity, a name given to those who were branded with any ignominious mark after the manner in which slaves were treated.

INSCRIP'TION, any monumental writing, engraved or affixed to a thing, to give a more distinct knowledge of it, or to transmit some important fact to posterity. The inscriptions mentioned by Herodotus and Diodorus Siculus, sufficiently show that this was the first method of conveying instruction to mankind, and transmitting the knowledge of history and sciences to posterity: thus the ancients engraved upon pillars both the principles of sciences, and the history of the world. Pisistratus carved precepts of husbandry on pillars of stone; and the treaties of confederacy between the Romans and Jews were engraved on plates of brass. Antiquarians have accordingly been very curious in examining the inscriptions on ancient ruins, coins, medals, &c.

INSEC'TA, in natural history, the fifth class of animals in the Linnæan system, comprehending all insects except worms, which Linnæus has formed into a distinct class called *Vermes*. The *Insecta* are divided into seven orders, namely, the *coleoptera*, *lepidoptera*, *hemiptera*, *neuroptera*, *diptera*, and *aptera*. Most *insects* pass through three states or metamorphoses, the larva, the chrysalis, and the perfect insect. [See ENTOMOLOGY.]

INSECTIV'OROUS, an epithet for such birds, beasts, and fishes as feed or subsist on insects.

INSEN'SIBLE, that cannot be felt or perceived. Thus we say, the motion of the earth is *insensible* to the eye: a plant grows by *insensible* degrees: the humours of the body are thrown off by *insensible* perspiration.

INSOLA'TION, a term sometimes made use of to denote that exposure to the sun, which is made in order to promote the chemical action of one substance upon another. One of the most striking experiments of this kind is that of the exposure of vegetables (as fresh gathered cabbage leaves) in a glass jar of water to the rays of the sun, by the action of which a large quantity of pure oxygen gas is obtained.

INSOL'VENCY, the state of a person who has not property sufficient for the payment of his debts. A bankrupt is an insolvent; but persons may be in a state of insolvency without having committed any of the specific acts which render them liable to a commission of bankruptcy.

INSOL'VENT ACTS, certain acts of parliament passed for the purpose of releasing from prison, and sometimes from their debts, persons who cannot take the benefit of the bankrupt laws.

INSPIRA'TION, in theology, the conveying certain notices or monitions into the mind, by extraordinary or supernatural influence; or the communication of the divine will to the understanding by suggestions or impressions on the mind. "All Scripture is given by *inspiration* of God." 2 Tim. iii.—People are accustomed also to attribute the poetic spirit, or flights of the imagination, which are found in the writings of some poets, to *inspiration;* but, without judging harshly, we believe we may affirm, that the word is thereby much more often profaned than correctly applied.——*Inspiration*, in anatomy, the act of breathing or taking in the air by the alternate contraction and dilatation of the chest.

INSPISSA'TION, in chemistry, the

SEVERAL INSECTS APPEAR TO HAVE THE SENSE OF SMELLING, BUT THE ORGAN IN WHICH IT RESIDES HAS NOT BEEN DISCOVERED.

bringing a liquor to a thicker consistence by evaporating the thinner parts.

INSTALLA'TION, the ceremony of inducting, or investing with any charge, office, or rank; as, the placing a dean or prebendary in his stall or seat, or a knight into his order.

INSTAL'MENT, in commercial transactions, the payment of a certain portion of a gross sum, which is to be paid at different times, or, as the phrase is, by *instalments*. In constituting a capital-stock by subscriptions of individuals, it is customary to afford facilities to subscribers by dividing the sum subscribed into instalments, or portions payable at distinct periods. In large contracts also, it is not unusual to agree that the money shall be paid by instalments.

IN'STANT, the smallest perceptible portion of time; or that wherein we perceive no succession.

INSTAN'TER, in law, instantly; without the least delay; as, the party was compelled to plead *instanter*.

IN STATU QUO *(Latin)*, a term signifying that condition in which things were left at a certain period; as when belligerent parties agree that their mutual relations should be *in statu quo*, or as they were before the commencement of a war; and the like.

INSTAURA'TA TER'RA, in archæology, land ready stocked or furnished with all things necessary to carry on the employment of a farmer.

INSTAU'RUM ECCLE'SIÆ, the vestments, plate, and all utensils belonging to a church.

IN'STINCT, that power of volition or impulse produced by the peculiar nature of an animal, which prompts it to do certain things, independent of all instruction or experience, and without deliberation, where such act is immediately connected with its own individual preservation, or with that of its kind. Indeed, it is manifest that instinct not only makes animals perform certain actions necessary to the preservation of the species, but often altogether foreign to the apparent wants of the individual; and often, also, extremely complicated. We cannot attribute these actions to intelligence, without supposing a degree of foresight and understanding infinitely superior to what we can admit in the species that perform them. The actions performed by instinct are not the effects of imitation, for the individuals that execute them have often never seen them done by others; they bear no proportion to the common intelligence of the species, but become more singular, more skilful, more disinterested, in proportion as the animals belong to the less elevated classes. They are so much the property of the species, that all the individuals perform them in the same manner, without any improvement. The duckling hastens to the water, the hen remains the proper time on her eggs during incubation, the beaver builds his curious habitation with a skill peculiar to the species, and the bees construct, with architectural accuracy, their waxen cells. Instinct, then, is the general property of the living principle, or the law of organized life in a state of action.

IN'STITUTE, or INSTITU'TION, any society instituted or established according to certain laws, or regulations, for the furtherance of some particular object, such as colleges or seminaries for the cultivation of the sciences, Literary Institutes, Mechanics' Institutes, and others.——We apply the word *institution* to laws, rites, and ceremonies, which are enjoined by authority as permanent rules of conduct or of government; as, the institutions of Moses or Lycurgus. Also, a society of individuals for promoting any public object, as a charitable or benevolent *institution*.——The term is also used for the putting a clerk into possession of a spiritual benefice, previous to which the oath against simony, and the oaths of allegiance and supremacy, are to be taken.

IN'STRUMENT, Musical, a machine or sonorous body, artificially constructed for the production of musical sounds. They are divided into three kinds, wind instruments, stringed instruments, and instruments of percussion.——*Mathematical instruments*, a common case of, contains,—a pair of plain compasses; a pair of drawing compasses; a drawing pen; a protractor; a parallel ruler: a plain scale; and a sector; besides black lead pencils.——*Instrument*, in law, a deed or writing drawn up between two parties, and containing several covenants agreed between them.

INSTRUMEN'TAL MU'SIC, music produced by instruments, as distinguished from *vocal* music; particularly applied to the greater compositions, in which the human voice has no part. Until the middle of the last century, the Italian composers used no other instruments in their great pieces than violins and bass-viols; at that time, however, they began to use the hautboy and the horn; and even to this day, the Italians use wind instruments much less than the French and Germans. In general, symphonies and overtures, solos, duets, terzettos, quartettos, &c., sonatas, fantasias, concerts for single instruments, dances, marches, &c., belong to instrumental music.

IN'SULATED, in architecture, an appellation given to such columns as stand alone, or free from any contiguous wall, &c., like an island in the sea; whence the name.

INSULA'TION, in electrical experiments, that state in which the communication of electrical fluid is prevented by the interposition of a non-electric body.

INSU'RANCE, in law and commerce, the act of providing against a possible loss, by entering into contract with one who is willing to give assurance; that is, to bind himself to make good such possible loss, upon the contingency of its occurrence. In this contract, the chances of benefit are equal to the insurer and the assurer. The first actually pays a certain sum, and the

latter undertakes to pay a larger, if an accident should happen. The one, therefore, renders his property secure; the other receives money, with the probability that it is clear gain. The instrument by which the contract is made, is denominated a *policy*, and the stipulated consideration is called the *premium*. These are generally for protection against losses by fire, or risks at sea. Policies on *lives* are another description of this contract, whereby a party, for a certain premium, agrees to pay a certain sum, if a person, to whose life it relates, shall die within a time specified, or to pay the executors of the insured a certain sum at the time of his death. These policies, however, usually make an exception of death by suicide. According to general practice, a life insurance is seldom made by the payment of a single sum when it is effected, but almost always by the payment of an *annual premium* during its continuance, the first being paid down at the commencement of the insurance. An individual, therefore, who has insured a sum on his life, would forfeit all the advantages of the insurance, were he not to continue regularly to make his annual payments. But by attending to this, not only does he materially augment the comfort and well-being of those dependent on him; but, being thus led to contract a habit of saving for this particular object, it is probable that the habit will acquire additional strength; while his mind will be relieved from the anxiety attendant on that distressing state of fear and uncertainty, which must ever aggravate the terrors of death to one who contemplates the prospect of leaving behind him a destitute family.

INTA'GLIOS, precious stones on which are engraved the heads of eminent men, inscriptions, &c., such as are set in rings, &c. [See GEMS.]

IN'TEGER, in arithmetic, a whole number, in contradistinction to a fraction.—— *Integrant particles* of bodies, are those into which bodies are reduced by solution or mechanical division, as distinct from *elementary* particles.—— *Integral calculus*, in algebra, the finding of the integral from the differential, which answers to the inverse method of fluxions.

INTEG'UMENT, in anatomy, a covering or membrane, which invests any particular part of the body. The skin of seeds and the shells of crustaceous animals are also denominated *integuments*.

IN'TELLECT, that faculty of the human mind, which receives or comprehends the ideas communicated to it; otherwise called the *understanding*.

INTEND'ANT, a word much used in France, denoting a person who has the charge, direction, or management of some office or department; as an *intendant* of marine, an *intendant* of finance, &c.

INTER'CALARY, in chronology, an epithet given to the day inserted in leap-year.——In medicine, *intercalary days* are those during the course of a distemper in which nature is excited to throw off her load unseasonably, as the 3d, 5th, 9th, 13th, and 19th.

INTERCES'SION, in Roman antiquity, the act of a tribune of the people, whereby he inhibited the act of another magistrate, or prevented the passing of a law in the senate, which was usually done by the single word *veto*.

INTERCOLUMNIA'TION, in architecture, the space between two columns, which is always to be proportioned to the height and bulk of the columns.

INTERCOS'TAL, in anatomy, an appellation given to such muscles, nerves, arteries and veins as lie between the ribs.—— The great *intercostal nerve* arises in the cavity of the cranium, from a branch of the sixth and one of the fifth pair, uniting into one trunk, which passes out of the cranium through the carotid canal, and descends by the sides of the bodies of the vertebræ of the neck, thorax, loins, and os sacrum; receiving in its course the small accessory branches from all the thirty pair of spinal nerves.

IN'TERDICT, an ecclesiastical censure, by which the church of Rome forbids the performance of divine service in a kingdom, province, town, &c. This censure has been frequently executed in France, Italy, and Germany; and, in the year 1170, pope Alexander III. put all England under an *interdict*, forbidding the clergy to perform any part of divine service, except baptizing infants, taking confessions, and giving absolution to dying penitents.

IN'TEREST is the sum of money paid or allowed for the loan or use of some other sum, lent for a certain time, according to a fixed rate. The sum lent is called the *principal*: the sum agreed on as interest, is called the *rate per cent.*, and the principal and interest added together is called the *amount*. Interest is distinguished into *simple* and *compound*. Simple interest is that which is paid for the principal, or sum lent, at a certain rate or allowance made by law, or agreement of parties, whereby so much as 5*l.* or 6*l.* or any other sum, is paid for 100*l.* lent out for one year; and more or less proportionally for greater or lesser sums, and for more or less time.——*Compound interest* is when the interest for one year is added to the principal, and the interest calculated in the following year on that accumulation. In this manner the principal nearly doubles every 14 years. The accumulation of money, when placed at compound interest, after a certain number of years, is exceedingly rapid, and in some instances appears truly astonishing. One penny, put out at 5 per cent. compound interest, at the birth of Christ, would, in 1810, have amounted to a sum exceeding in value 357,000,000 of solid globes of standard gold, each in magnitude as large as this earth! (the exact number of globes, according to this computation, is 357,474,600); while at simple interest, it would have amounted to only 7*s.* 7¾*d.* [We give this on the authority of the "Conversations' Lexicon," without stopping to ascertain its

IN THE REIGN OF KING JOHN THE KINGDOM OF ENGLAND LAY UNDER A PAPAL INTERDICT FOR ABOVE SIX YEARS TOGETHER.

IT WAS NOT UNFREQUENT, IN THE MIDDLE AGES, FOR PRINCES TO CAUSE THE TERRITORIES OF THEIR VASSALS TO BE PUT UNDER INTERDICT.

THE ONLY CASE IN WHICH COMPOUND INTEREST IS ALLOWED BY THE LAWS OF GREAT BRITAIN, IS THAT OF ANNUITIES.

accuracy; but recommend it as an arithmetical exercise to our young friends.]——*Interest*, in arithmetic, a rule by which the interest of money is computed.——*Interest*, in law, is generally taken for a chattel real, or a lease for years, &c., but more for a future term.

INTERFOLIA'CEOUS, in botany, an epithet for flowers or peduncles that are between opposite leaves which are placed alternately.

INTERJEC'TION, in grammar, an indeclinable part of speech, serving to express some passion or emotion of the mind; as, "Alas! my fondest hopes are now for ever fled."

INTERLOC'UTORY *Order* or *Decree*, in law, an order that does not decide the cause, but only some matter incident thereto, which may happen in the intermediate stage of a cause; as when, in chancery or exchequer, the plaintiff obtains an order for an injunction until the hearing of the cause; which order, not being final, is called interlocutory.

IN'TERLUDE, in the drama, a light entertainment exhibited on the stage between the principal performance and the afterpiece. At present, the term *interlude* is applied principally to small comic operas, written for two or three persons. In ancient tragedy, the chorus sung the interludes between the acts.

INTERLU'NIUM, in astronomy, the time in which the moon has no appearance or phases.

INTERMIT'TENT *Fevers*, such fevers as subside and soon return again. These fevers are distinguished into various classes, according to the interval of time between the relapse into them, as *tertian* fever, *quartan* fever, &c.

INTERNO'DIUM, in botany, the space contained between any two knots or joints of the stalk of a plant.

INTEROS'SEI PE'DIS, in anatomy, seven muscles of the toes, which serve to extend them.——*Interossei musculi manus*, the muscles of the hand between the bones, which serve to extend the fingers: they are divided into external and internal.

INTERPOLA'TION, in philological criticism, the insertion of spurious passages in the writings of some ancient author.——In mathematics, that branch of analysis which treats of the methods by which, when a series of quantities succeeding each other, and formed all according to some determinate law, are given, others subject to the same law may be interposed between them.

INTERREG'NUM, the time during which a throne is vacant, in elective kingdoms; for in such as are hereditary, like that of England, there is no such thing as an *interregnum*.

INTERROGA'TION, in grammar, a character or point (?) denoting a question, as, Do you love me?——*Interrogation*, in rhetoric, a figure containing a proposition in the form of a question.

INTERROG'ATORY, in law, a question in writing demanded of a witness in a cause, who is to answer it under the solemnity of an oath.

INTERSEC'TION, in mathematics, the cutting of one line or plane by another: thus we say, that the mutual intersection of two planes is a right line.

INTERSTEL'LAR, situated beyond the solar system.

IN'TERVAL, in music, the difference between the number of vibrations, produced by one sonorous body of a certain magnitude and texture, and of those produced by another of a different magnitude and texture, in the same time. The ancients divided the *intervals* into simple or uncomposite, which they call *diastems*, and composite intervals, which they call *systems*. Modern musicians consider the *semitone* as a simple interval, and only call those composite which consist of two or more semitones.

INTERVERTEBRA'LES, in anatomy, the muscles which draw the vertebræ nearer to each other.

INTES'TINA, in zoology, an order in the Linnæan system, of the class *Vermes*, including earthworms and leeches.

INTES'TINES, the bowels of an animal, consisting of small ones disposed in convolutions, four or five times as long as the animal, and of large ones called the *cæcum*, the *colon*, and the *rectum*; the whole having a motion backwards and forwards, called the peristaltic motion. The small intestines have internally folds, called *valvula conniventes*; and the large intestines have muscular bands.

INTONA'TION, in music, the act of sounding the notes in the scale with the voice, or any other given order of musical tones. It consists, in fact, in giving to the tones of the voice or instrument that occasional impulse, swell, and decrease, on which, in a great measure, all expression depends.

INTOXICA'TION, the state produced by the excessive use of alcoholic liquids. It may be called *progressive madness*. Its first stage is marked by an increased circulation of the blood; the consciousness is not yet attacked, the fancy is more lively, and the feeling of strength and courage is increased. In the second stage, the effect on the brain is more decided: the peculiarities of character, and the faults of temperament, which in his sober moments the individual could control and conceal, manifest themselves without reserve. Consciousness, in the next stage, becomes more weakened; the balance of the body cannot be kept, and dizziness attacks the brain. In the next degree, the soul is overwhelmed in the tumult of animal excitement; consciousness is extinguished; the organs of speech refuse to perform their office, or the tongue pours forth an incoherent jargon; the face is red and swollen; the eyes are protruded and meaningless; and the drunkard falls into a state of stupor and insensibility.

INTROSUSCEP'TION, the falling of one part of an intestine into another, or

IN THE HISTRIONIC, AS IN THE MUSICAL ART, A GOOD INTONATION IS ONE OF THE FIRST QUALIFICATIONS FOR A PROFESSOR.

the passing of one part within another, causing a duplicature of the intestine.

INTRAN'SITIVE, in grammar, an epithet for a verb that expresses actions that do not *pass over* to an object, as I *go*, I *come*, I *sleep*, &c.

IN TRAN'SITU, *(Latin)* during the passage from one place to another.

INTRENCH'MENT, in fortification, any work that shelters a post against the attacks of an enemy.

INTRU'SION, in law, a violent or unlawful seizing upon lands or tenements.

INTUI''TION, mental view or perception; the instantaneous act of the mind in perceiving the agreement or disagreement of two ideas.

INU'LA, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. The species are principally perennials, and natives of the East.

IN'ULINE, in chemistry, a white and pulverulent starch-like substance, extracted from the root of the *Inula Stellenium*, or elecampane. It exists also in the roots of colchicum and pellitory.

INUN'DATÆ, in botany, one of the Linnæan natural orders, consisting of aquatic plants.

IN VAC'UO, *(Latin)* in empty space, or in space comparatively empty.

IN'VALID, a person who is maimed, wounded, or otherwise disabled. In military or naval affairs, a soldier or sailor wounded or disabled in war, and unfit for service. The noble establishments at Greenwich and Chelsea for the *invalids* of the navy and army are among the proudest monuments of the British nation.

INVEN'TION, in a general sense, the contrivance and production of something that did not before exist.——In painting, the finding or choice of the objects which are to enter into the composition of the piece.——In rhetoric, the finding and selecting of arguments to prove and illustrate the point in view.——In poetry, it is applied to whatever the poet adds to the history of the subject.

INVER'SE RATIO, is when the effect or result of any operation is *less* in proportion as the cause is *greater*, or is *greater* in proportion as the cause is *less*.

INVER'SION, in geometry, the changing antecedents into consequents in the terms of proportion, and the contrary.—— In grammar, a change of the natural order of words.——In music, the change of position, either of a subject or of a chord.

INVER'TENS *somnus*, in botany, a term denoting the sleep of plants, during which the leaves are inverted.

INVEST'ITURE, in law, the open delivery of seisin or possession. There was anciently a great variety of ceremonies used upon investitures. At first they were made by a certain form of words; afterwards, by such things as had the greatest resemblance to the thing to be transferred: thus where lands were intended to pass, a turf, &c. was delivered by the grantor to the grantee.

INVOCA'TION, in theology, the act of addressing God in prayer for his assistance and protection.——*Invocation*, in poetry, an address at the beginning of a poem, wherein the poet calls for the assistance of some divinity, particularly of his muse, or the deity of poetry. In the course of an epic poem several invocations may occur, particularly when any thing extraordinary is to be related; but the first invocation is always the most considerable.

IN'VOICE, in commerce, a written account of the particulars of merchandize shipped or sent to a purchaser, factor, &c. with the value or prices and charges annexed.

INVOLU'CRUM, in botany, a sort of calyx or cup, which surrounds a number of flowers together, every one of which has, besides this general cup, its own particular perianthium.

INVOLU'TION, in algebra, the raising any quantity to a given power by multiplying it into itself the required number of times; thus, the cube of 3 is got by multiplying 3, the root, into itself twice, as $3 \times 3 \times 3 = 27$. Here 27, the third power of 3, is found by *involution*, or multiplying the number into itself, and the product by the same number.

I'ODINE, in chemistry, a poison, of a black colour and metallic lustre, procured from kelp; resembling chlorine in its odour, and power of destroying vegetable colours. Iodine is incombustible, but with azote it forms a curious detonating powder. It is scarcely at all soluble in water, but is readily taken up by alcohol and ether, to which it imparts a reddish-brown colour. The test made use of for the detection of iodine in any solution, is starch, with which iodine has the property of uniting, and of forming with it a compound, recognizable by its deep blue colour. For the investigation of its properties we are chiefly indebted to Gay Lussac and Sir Humphry Davy.——*Iodic Acid* is formed by the combination of iodine with oxygen.——*Iodate*, a salt formed by the combination of iodic acid with salifiable bases.——*Iodide*, a substance formed by the union of iodine with any of the metals; as, the iodide of mercury, which is a beautiful red powder. The iodides of potassium and iron are supposed to possess great powers in resolving glandular swellings.

ION'IC. The *Ionic Order* is the third of the five orders of architecture, being a kind of mean between the robust and delicate orders. The first idea of this order was given by the people of Ionia, who, according to Vitruvius, formed it on the model of an elegantly shaped young woman; whereas the Doric had been formed on the model of a strong robust man. The height of its column is nine times the diameter: its capital is adorned with volutes, or ram's horns, but it has no leaves of the acanthus, like the Composite.——The *Ionic Sect* of philosophers was founded by Thales, a native of Miletus in Ionia, which occasioned his followers to assume the appellation of *Ionic*. Thales was succeeded by Anaxi-

IRON BECOMES RED-HOT BY HAMMERING, IN CONSEQUENCE OF THE CONDENSATION OF THE METAL BY THE FORCE OF THE BLOW.

mander and Anaximenes, both of Miletus; Anaxagoras Clazomenius succeeded them, and removed his school from Asia to Athens, where Socrates was his scholar. They held that water was the principle from which all corporeal things were derived, and into which they will finally be resolved again. They admitted but *one* world, which they regarded as the work of God, and as animated by him as its soul. They maintained that the universe was governed by destiny, by which they meant the immutable laws of Providence. They asserted matter to be changeable, but denied that it was divisible to infinity. They believed the existence of *spirits* or *demons*, as intelligent and immortal substances. The soul, according to their doctrine, existed after it left the body; and they attributed to inanimate things a kind of torpid soul.——*Ionic mood*, in music, a light and airy sort of music among the ancients, consisting of soft and melting strains.

IPECACUAN'HA, a medicinal root, produced in South America, and introduced into Europe in the 17th century, when it was much esteemed for the cure of dysenteries. Its taste is bitter and acrid, covering the tongue with a kind of mucilage. It is one of the safest and mildest emetics with which we are acquainted, and is administered as a powder, in the tincture, or infused in wine.

IRID'IUM, in mineralogy, a metal discovered in 1803, and which received its name from its different solutions presenting all the colours of the rainbow. Iridium occurs only in the ore of platinum, is the most refractory of all the metals, and appears as a gray metallic powder.

I'RIS, in botany, the flower-de-luce or flag-flower, &c.; a plant with a bulbous root, which bears a beautiful blue flower. There are many species of it, as the common yellow or water iris, the flag iris, the dwarf iris, &c.——*Iris*, in anatomy, a variegated circle which surrounds the pupil of the eye, by means of which that opening is enlarged or diminished.——The changeable colours which sometimes appear in the glasses of telescopes, &c.——A coloured spectrum which a triangular glass prism casts on a wall, when placed at a due angle in the sun-beams.

I'RON *(ferrum)*, in mineralogy, one of the imperfect metals, but the hardest and most useful, as well as the most plentiful of any. It is found rarely in native masses; but in ores, mineralized by different substances, it abounds in every part of the earth. It is of a livid whitish colour, inclined to gray, but when cut, of a bluish gray. It has a metallic lustre, fine-grained texture, and is very brittle. Next to tin, it is the lightest of all metallic substances, and next to gold, the most tenacious. Iron is attracted by the magnet, and is capable of becoming magnetic; but it retains this quality only a short time. It is the only metal which takes fire by the collision of flint. Heated in contact with air, it becomes oxydized. It combines with carbon, and forms what is called steel. It combines with phosphorus in a direct and an indirect manner, and unites with sulphur readily by fusion. All acids act upon iron. Nitrate of potash detonates very vigorously with it. Iron is likewise dissolved by alkaline sulphurets; and it is capable of combining with a number of metals. When rubbed it has a slight smell, and it imparts to the tongue a peculiar astringent taste, called chalybeate. In a moist atmosphere, iron speedily oxydizes, and becomes covered with a brown coating, called rust. Iron is remarkable for the effect fire has on it, in rendering it more ductile; most of the other metals are brittle while they are hot; but this is most of all malleable, as it approaches nearest to fusion. It grows red-hot long before it melts, and is known to be approaching towards that state, by its becoming whiter, and by its sparkling: if taken from the fire as soon as it runs, it is found to be more malleable for the fusion; but if it be kept long in that state, its sulphur dissipates in form of a white smoke; the metal after this becomes much more brittle, and in fine runs into a bluish glass. Iron, exposed to the focus of a great burning-glass, instantly grows red-hot, then turns whitish, sparkles and flames, and immediately after melts; soon after this the greatest part of it flies off in sparks, which appear very bright, and, if caught upon paper, are found to be so many little globular bodies, all hollow like bomb-shells: the remainder runs into a bluish or purplish glass; and this glass, exposed again to the same focus, on a piece of charcoal, takes up, from the vegetable fuel, the sulphur or inflammable principle it had lost, and becomes true iron again. Upon the whole, the effects of a common, and those of a solar fire, on this body, concur to prove that it consists of vitriolic salt, a vitrifiable earth, and a peculiar bituminous matter, not found in any of the other metals. When perfectly pure, it readily melts with gold and silver, and unites with them in fusion; but if it be impure, it separates itself, and forms a distinct regulus above the surface of the other. On being heated red-hot, it increases in bulk and in weight; but it returns to its former gravity and dimensions when cold. In the great iron works, the ore, broken into small pieces, and mixed with lime or some other substance to promote its fusion, is thrown into the furnace; and baskets of charcoal or coke, in due proportion, are thrown in along with it. A part of the bottom of the furnace is filled with fuel only. This being kindled, the blast of the great bellows is directed on it, and soon raises the whole to a most intense heat: this melts the ore immediately above it, and the reduced metal drops down through the fuel and collects at the bottom. The rest sinks down to fill up the void left by the consumed fuel, and this, in its turn, comes next in the way of the bellows, and is also reduced. More ore and fuel are supplied above, and the operation goes on

BY LONG-CONTINUED HAMMERING IRON IS DERIVED OF ITS MALLEABILITY, AS IT THEREBY LOSES A PORTION OF ITS LATENT HEAT.

till the melted metal at the bottom, increasing in quantity, rises almost to the aperture of the blast; it is let out by piercing a hole in the side of the furnace, and then forms what are called *pigs* of cast iron.—In summing up the various uses of iron, we will quote the words of Dr. Ure, who very truly observes, "it accommodates itself to all our wants, our desires, and even our caprices; it is equally serviceable to the arts, the sciences, to agriculture, and war; the same ore furnishes the sword, the ploughshare, the scythe, the pruning-hook, the needle, the graver, the spring of a watch or of a carriage, the chisel, the chain, the anchor, the compass, the cannon, and the bomb. It is a medicine of much virtue, and the only metal friendly to the human frame." To this let us add the astounding fact, that the total production of iron in Great Britain in one year, is, as nearly as can be calculated, *one million of tons!*——*Action of Sea and River Water on Iron.* At a late meeting of the British Association, Messrs. Mallet and Davy communicated the results of their experiments, which are of great importance to the civil engineer. They find that pure oxygen and pure water are both neutral bodies in regard to iron, and only act on it together; that the larger the quantity of uncombined or suspended carbon in cast iron, the more is it acted on by these agents; so much so, that soft Scotch or Irish cast iron may be used to protect grey or chilled cast iron from all corrosion. With respect to the protection of iron by electro-chemical agency, zinc will only protect iron for a time: the oxyde of zinc becoming transferred to the surface of the iron, when all protection is at an end.

IRON-CLAY, in mineralogy, a basaltic substance, of a reddish-brown colour, occurring massive or vesicular.

IRON-FLINT, in mineralogy, a subspecies of quartz, with a fracture more or less conchoidal, shining and nearly vitreous. It occurs either in six-sided prisms, in small grains, and also in masses. Its varieties are red, yellow, and greenish.

IRONY, a mode of speech, or writing, expressing a sense contrary to what the speaker or writer means to convey. When irony is uttered, the dissimulation is generally apparent from the manner of speaking, which may be either accompanied by an arch look or by affected gravity.

IRRITABIL'ITY, in medicine, a property peculiar to muscles, by which they contract upon the application of certain stimuli, without a consciousness of action. This power may be seen in the tremulous contraction of muscles when lacerated, or when entirely separated from the body in operations. Even when the body is dead to all appearance, and the nervous power is gone, this contractile power remains till the organization yields, and begins to be dissolved. Thus there is a great distinction between the *irritability* of muscles and the *sensibility* of nerves. All the muscles of voluntary motion answer to stimuli with a quick and forcible contraction; and yet they hardly feel the stimuli by which these contractions are produced, or, at least, they do not convey that feeling to the brain. There is no consciousness of present stimulus in those parts which are called into action by the impulse of the nerves, and at the command of the will: so that muscular parts have all the irritability of the system, with but little feeling, and that little owing to the nerves which enter into their substance; while nerves have all the sensibility of the system, but no motion.

ISA'IAH, or *the Prophecy of* ISAIAH, a canonical book of the Old Testament. Isaiah is the first of the four great prophets, the other three being Jeremiah, Ezekiel, and Daniel. The style of Isaiah is noble, sublime and florid. Grotius calls him the Demosthenes of the Hebrews. He had the advantage, above the other prophets, of improving his diction by conversing with men of the greatest learning and elocution; and this added a sublimity, force, and majesty to what he said. He boldly reproved the vices of the age in which he lived, and openly displayed the judgments of God that threatened the Jewish nation; at the same time denouncing vengeance on the Assyrians, Egyptians, Ethiopians, Moabites, Edomites, Syrians, and Arabians, who were instrumental in inflicting those judgments. He foretold the deliverance of the Jews from their captivity in Babylon, by the hands of Cyrus king of Persia, a hundred years before it came to pass; but the most remarkable of his predictions are those concerning the Messiah, in which he not only foretold his coming in the flesh, but many of the great and memorable circumstances of his life and death. The whole, indeed, bears the stamp of genius and true inspiration.

ISCHIAD'IC, in medicine, an epithet for that rheumatic affection of the hip called *sciatica*.

ISCHNOPHO'NIA, in medicine, a shrillness of the voice; but more frequently an impediment or hesitation of speech.

IS'CHURY, in medicine, a stoppage or suppression of urine.

IS'ERINE, a mineral of an iron black colour, and of a splendid metallic lustre, occurring in small obtuse angular grains.

I'SINGLASS, in commerce, a substance, consisting chiefly of gelatine, which is found to be composed of the sounds, or air-bladders, of those fish from which this membrane may be separated with sufficient ease. The sounds of freshwater fish are to be preferred, because these are the most transparent, flexible, and delicate; but those of the cod and ling are collected by the fishermen of Newfoundland and Iceland. The coarser sorts of isinglass are made of the intestines of the fish. The preparation of isinglass, from salt-water fish, is merely that of freeing the sound from the membranes out of its sides, with the knife; putting it, for a few minutes, in lime-water, that its oily principle may be absorbed; and, lastly,

THE ISLAND OF ELBA IS CELEBRATED FOR ITS INEXHAUSTIBLE MINES OF RICH IRON ORE, AND FOR THE ANTIQUITY OF ITS MINING OPERATIONS.

MAGNETIC IRON ORE BELONGS TO PRIMITIVE ROCK FORMATIONS, AND OCCURS ABUNDANTLY IN SWEDEN, NORWAY, SIBERIA, CHINA, AND SIAM.

THE GRAPHITE OF CAST IRON IS OBTAINED IN SCALES OF A METALLIC ASPECT, BUT THE COMBINED CARBON IS CONTAINED IN A POWDER.

PURE IRON, IN SPECIFIC GRAVITY, IS 7.7; BUT IT MAY BE MADE 7.8 BY HAMMERING. THE SPECIFIC GRAVITY OF CAST IRON IS 7.281.

washing it in clean water. The sounds of fresh-water fish do not need the whole of this process. The vermicular form in which isinglass is usually seen, is supposed to have been given to it by its original manufacturers, the Russians, rather to conceal its essence, than with any other view. Isinglass boiled in milk forms a mild, nutritious jelly; and when flavoured by the art of the cook, is *blancmanger*. It is also used in fining fermented liquors, and for various other purposes.

IS'LAMISM, the practical as well as the doctrinal tenets of the Mohammedan religion, embracing the whole of their civil and religious polity.

I'SLAND CRYS'TAL, a transparent stone of the nature of spar, a piece of which laid upon a book, every letter seen through it will appear double. It was originally found in Iceland, whence it was called Iceland or Island Crystal, and is to be met with in France and other parts of Europe.

ISOCH'RONAL or ISOCH'RONOUS, an epithet applied to the vibrations of a pendulum, *i. e.* performed in the same space of time.

ISOMORPH'OUS, an epithet for any admixture capable of retaining its primitive form in a compound.

ISOPERIMET'RICAL FIG'URES, such as have equal perimeters or circumferences.

ISOTOM'IC, in music, consisting of intervals, in which each concord is alike tempered, and in which there are twelve equal semitones.

IS'SUANT, in heraldry, an epithet for a lion or other beast coming out of the bottom line of any chief or fess.

IS'SUE, in law, the legitimate offspring of parents. Also, the profits arising from lands, tenements, fines, &c.——The point of matter *at issue* between contending parties in a suit, is when a thing is affirmed on the one side, and denied on the other.——*Issue*, in medicine, an artificial aperture, giving vent to noxious humours in the body.

IST'HMIAN GAMES, so called because they were celebrated in the Isthmus of Corinth, which joins the Peloponnesus to the Continent, at the temple of Isthmian Neptune, which was surrounded with a thick forest of pine. They were originally held in the night, and had perhaps fallen into disuse, when Theseus restored them, and ordered them to be celebrated in the day. The contests were of the same kind as at the Olympic games; and so great was the concourse at these games, that only the principal people, of the most remarkable cities, could have place.

IST'HMUS, in geography, a neck or narrow slip of land joining a peninsula to a continent, as the isthmus of Corinth; or by which two continents are connected, as the isthmus of Darien, which connects North and South America.

ITAL'IAN, a native of Italy, or the language spoken by its inhabitants. The origin of this beautiful and most harmonious tongue, is involved in great obscurity; it has, however, generally been supposed, that the Italian originated from a mixture of the classical Latin with the languages of the barbarians who overran Italy; indeed, the language spoken at the present day by the well educated classes is essentially a Latin dialect. With regard to the general state of Italian literature, it may be affirmed to be in a less flourishing state than that of the different countries by which Italy is surrounded; yet nowhere have more illustrious poets appeared than those of which Italy can boast; while she stands unrivalled among the moderns for her sculptors, her painters, and her musicians.

ITAL'ICS, in printing, characters or letters (first used in Italy) which stand inclining; thus—*Italic;* and which are often used by way of distinction from Roman letters, for emphasis, antithesis, or some peculiar importance attached to the words in which they are employed.——*Italicize*, to write or print in Italic characters.

ITAL'IC SECT, the name of a sect of ancient philosophers, founded by Pythagoras; so called, because that philosopher taught in Italy, spreading his doctrines among the people of Tarentum, Metapontus, Heraclea, &c.

I'VORY, the tusks and teeth of the elephant, and of the walrus or sea-horse; a hard, solid substance, of a fine white creamy colour, and greatly esteemed for the fineness of its grain, and the high polish it is capable of receiving. That of India loses its colour and becomes yellow; but that of Achem and Ceylon is free from this imperfection. Ivory is extensively used by cutlers in the manufacture of handles for knives and forks; by miniature painters for their tablets; by turners, in making numberless useful and ornamental objects, as well as for chess-men, billiard balls, toys, &c.; also by musical and philosophical instrument makers; comb-makers; and by dentists for making artificial teeth; for which last-mentioned purpose the ivory of the walrus is preferred. It appears that no less than 4000 male elephants are annually destroyed in order to obtain the number of tusks which, on an average, are imported into this country. The western and eastern coasts of Africa, the Cape of Good Hope, Ceylon, India, and the countries to the eastward of the straits of Malacca, are the great marts whence supplies of ivory are derived.

IVY, in botany, a parasitic creeping shrub, the *Hedera helix* of Linnæus. The leaves are smooth and glossy, varying much in form, from nearly oval to five-lobed, and their perpetual verdure gives the plant a very beautiful appearance. It clings to the sides of old walls, rocks, &c., and sometimes ascends to the summit of the tallest trees. *Ground Ivy*, a perennial plant; the *Glecoma hederacea*.

IX'IA, in botany, a genus of plants, class 3 *Triandria*, order 1 *Monogynia*. The species are bulbs.

IXO'RA, in botany, a genus of plants, class 4 *Tetrandria*, order 1 *Monogynia*. The species are perennials, natives of the East and West Indies.

J.

J, when reckoned a distinct letter, as it now always is, (instead of I being substituted for it, as formerly), is the tenth in the alphabet, and has a soft sound in English, like that of the *g* in *genius;* as *jet, jack, Jones.*

JAB'IRU, in ornithology, an aquatic fowl of the crane kind.

JAC'AMAR, in ornithology, a description of birds arranged by Linnæus under the genus *Alcedo,* but placed by Cuvier in a separate genus, *Galbula.* They are about the size of a lark, and have a brilliant plumage. There are several species, some of which are natives of India, but the most beautiful are met with in South America.

JA'CINTH, the HYACINTH [which see.]

JACK, in mechanics, a well-known engine of common use, for raising great weights of any kind. The ordinary kitchen-jack is a compound engine, in which the weight is the power applied to overcome the friction of the parts, and the weight with which the spit is charged; and in which a steady and uniform motion is obtained by means of the fly.——The *smoke-jack* is moved by a fan placed horizontally in the chimney, and, being carried about perpetually by the draught of the fire, requires no winding up.——*Jack,* in ichthyology, a name given to a young pike.——The male of certain animals; as a *jack*-ass.——Also, a nickname or diminutive of *John.*——*Jack* is also used for a horse or wooden frame, to saw timber upon; for a coat of mail, and likewise the garment worn over it; for the small bowl which serves as a mark at the exercise of bowling, &c.——*Jack,* in a ship, an ensign or flag hoisted up at the sprit-sail top-mast head.

JACK'AL, in zoology, the *Canis aureus* of Linnæus; a beast of prey, nearly allied to the dog and fox. It rouses other beasts by its cry, so that they are easily taken by the lion, whence it is called the *lion's provider.* Like the vulture and hyæna, he does not require living prey to feed upon; but wherever there is an animal body putrefying, his nose scents it at a great distance, and the air is soon freed from the effluvium. The jackal is a native of Asia and Africa. Buffon gives the following character of this animal: "It unites the impudence of the dog with the cowardice of the wolf, and participating in the nature of each, is an odious creature, composed of all the bad qualities of both."

JACK'DAW, in ornithology, a species of *corvus,* with a black and grey head, and the body, wings, and tail of a glossy black. It is a garrulous, thievish, and mischievous bird.

JAC'OBIN, a name given, during the revolution in France, to the more violent advocates for republican government. The appellation originated in the circumstance, that the secret meetings of that party were held in a building anciently belonging to the Jacobin monks (an order of Dominicans), where they concerted measures to direct the proceedings of the National Assembly. Hence the word *Jacobin* has been applied to any turbulent demagogue who opposes government in a secret and unlawful manner. The Jacobin club had the following origin: Some short time after the American revolution, political societies were formed in Paris (where *bureaux d'esprit,* or associations for the discussion of literary subjects, had previously been common), in which political subjects were debated, and the members of which were almost universally inclined to republicanism. At first their real object was studiously concealed; but, gathering strength, they displayed their real intentions. Their external symbol was a red cap; afterwards, a dirty dress was the token of their *sansculottism.* The revolution proceeded rapidly; similar societies were formed in nearly all the towns in France; and thus it became enabled to direct the public opinion. In 1792, the leading club, in which sometimes more than 2500 members convened, kept up a correspondence with more than 400 affiliated societies, and the number of Jacobins in all France was estimated at about 400,000. It is not our purpose here, however, to enter into a history of these execrable terrorists, but merely to describe them. Though they split into parties and denounced each other, yet they vied with each other in savage ferocity and a blasphemous contempt for religion; their malign influence accordingly extended far and wide; and there is abundant reason to believe that the seed of Jacobinism continues even yet to produce, not only in the country which first engendered it, but throughout the whole civilized world, that rabid and ruthless spirit which wars against social order, and is continually plotting the destruction of all that is holy, wise, or venerable.

JACOB'S STAFF, a mathematical instrument for taking heights and distances.

JAC'OBITE, in English history, a partisan or adherent of James II. after he abdicated the throne, and of his descendants; consequently, an opposer of the revolution of 1688, in favour of William and Mary.——*Jacobite,* in church history, the name of two sects of Christians, in Syria and the adjacent countries. They hold that Jesus Christ had but one nature, and they practise circumcision before baptism.

JAC'OBUS, a gold coin in the reign of James I. of the value of 25*s.*

JACTITA'TION *of Marriage,* a suit in the ecclesiastical court, when one of the parties declares that he or she is married,

THE JACOBINS, AS A BODY, UNITED GREAT ENERGY WITH THE GREATEST VICES, AND COMMITTED THE MOST HORRID CRIMES IN THE NAME OF LIBERTY.

which if the other party deny, and no adequate proof of the marriage be brought, the offending party is enjoined silence on that head.

JADE, in mineralogy, *nephrite*, a stone remarkable for its hardness and tenacity; of a colour more or less green, and of a resinous or oily appearance when polished. It is found in detached masses or inhering in rocks, and is fusible into glass or enamel.

JA'GUAR, in zoology, the tiger of the Brazils; about the size of a wolf, brownish yellow, with black spots; very fierce and destructive in the woods of that country. His favourite prey appears to be the larger quadrupeds, such as oxen, horses, sheep, and dogs. When he has made choice of a victim, he springs on its back, and, placing one of his paws on the back of the head, whilst he seizes its muzzle with the other, twists its head round with a sudden jerk, thereby dislocating its spine, and thus depriving it of life.

JAL'AP, the root of a West Indian plant (the *convolvulus jalapa*), an herbaceous twining vine, of a black colour on the outside, and reddish within, with resinous veins. It was not known in England until after the discovery of America, and received its name from Xalapa, a town in New Spain. The principal constituent parts of jalap are resin and starch. It is much used in powder as a cathartic, and its taste is exceedingly nauseous.

JAMB, in architecture, the side-piece or post of a door; or the side-piece of a fireplace.

JAN'IZARIES, or JAN'ISSARIES, the appellation given to the grand seignior's guard, or the soldiers of the Turkish infantry. They became turbulent, and rising in arms against the sultan, in May, 1826, were attacked, defeated, and subsequently abolished, and their places supplied by troops trained after the European manner.

JAN'SENISTS, a sect of Christians who followed the opinions of Jansenius, bishop of Ypres, in France. These opinions respected grace and predestination, according to the doctrine of Augustine.

JAN'UARY, the first month of the year. Its name was given by the Romans, from *Janus*, the divinity who presided over the new year, and all new undertakings.

JAPAN', in commerce, a mode of varnishing, first learned of the Japanese. The basis of japan-varnishes is composed of seed-lac, resin, and spirit of wine. To this is added the colour required. Figures or flowers, upon the japan, should be executed with coloured varnish; but oil, which cannot be lasting, is frequently substituted. All bodies, the substance of which is firm, may be japanned. Paper is too flexible, unless under the form of "papier maché." The manufacture of japanned goods, as tea-trays, candlesticks, snuff-boxes, &c. is carried on to a very great extent at Birmingham; and at Bilston and Wolverhampton it also furnishes employment for many hands.

JAPAN-EARTH, Terra Japonica, or Catechu, a combination of gummy and resinous matter, obtained from the juice of a species of palm-tree.

JARGO'NIA, in mineralogy, a species of earth found in the gem *jargon*. In one hundred parts of jargon, Klaproth has found sixty-eight of this earth, which possesses peculiar properties. It is of a gray or greenish white colour.

JAS'MINE, in botany, a well known beautiful shrub, the *Jasminum officinale* of Linnæus, the flowers of which are highly fragrant, and afford, by distillation, an essential oil, which is much esteemed in Italy to rub paralytic limbs, and in the cure of rheumatic pains. There are thirty known species of this shrub.

JAS'PER, in mineralogy, a genus of stones, of the siliceous class, being a subspecies of rhomboidal quartz. It is of a complex irregular structure, of great variety of colours, and emulating the appearance of the finer marbles, or semipellucid gems. The great characteristic of jaspers is, that they all readily strike fire with steel, and make not the least effervescence with aquafortis.

JAS'PI CA'MEA, in natural history, the dull, broad-zoned, green and white camea; being a very elegant species much resembling the common camea in all things but colour.

JAS'PONYX, in mineralogy, the purest horn-coloured onyx, with beautiful green zones, composed of genuine matter of the finest jaspers.

JATRO'PHA, in botany, a genus of plants, class 21 *Monœcia*, order 8 *Monadelphia*. One species (the *Jatropha Manihot* or *Manioc*) abounds with a milky juice, and every part, when raw, is a fatal poison. It is remarkable that the poisonous quality is destroyed by heat; hence the root is boiled with meat, pepper, &c. into a wholesome soup, and what remains after expressing the juice, is formed into cakes or meal, the principal food of the inhabitants. This plant, which is a native of three quarters of the globe, is one of the most advantageous gifts of Providence, entering into the composition of innumerable preparations of an economical nature. [A farther and more detailed account of this remarkable plant will be found in the article *Manioc*.]

JAUN'DICE, a disease of which the distinguishing peculiarity is, that the whole skin becomes yellow. It proceeds from some affection of the liver and gall-bladder; and is often superinduced by long continuance of melancholy and painful emotions.

JAY, in ornithology, the *Corvus glandarius*; the upper feathers of the wings are blue, variegated with black and white. Jays are lively, petulant, and rapid in their movements; exceedingly noisy; and, like their kindred, the magpie and jackdaw, they can be taught a variety of words and harsh grating sounds.

JEAL'OUSY, that painful state of uneasiness which arises from the fear that a rival may rob us of the affection of one whom we love, or the suspicion that he has already

done it. In a more extended sense, *jealousy* may be said to be allied to *envy*; for jealousy is awakened by whatever may exalt others, or give them pleasures and advantages which we desire for ourselves. It may also have a more liberal interpretation, as an earnest concern or solicitude for the welfare of others. Such was Paul's godly *jealousy* for the Corinthians.

JEHO'VAH, one of the Scripture names of God, signifying the Being who is self-existent, and gives existence to others. This is the awful and ineffable name of the God of Israel, which was revealed to Moses; denoting Him who is, who was, and who is to come.

JEL'LY, the mucilaginous substance that is obtained, by decoction, from all the soft and white parts of animals, such as the membranes, tendons, ligaments, &c. [See GELATINE.]

JEM'IDAR, in military affairs, a black officer, who has the same rank as a lieutenant in the East India Company's service.

JESS'ED, in heraldry, an epithet for a hawk or falcon having jesses or straps of leather to tie the bells on the legs, which are generally of a different tincture.

JES'UITS, or the SOCIETY OF JESUS, an order in the Romish Church, political and religious, corresponding with a chief at Rome, and possessing great influence in all countries where they are tolerated. This society was instituted by Ignatius Loyola, A.D. 1540. It was a religious body, with a military constitution. Its superior was called its general; and his government was despotic. Unlike other communities of monks, the duties of this were to be performed in active life; its object being universal empire. By every exertion of talent, by every useful work, by every public virtue, and by every private intrigue, it sought to attain an imperious ascendancy over mankind. Its ostensible aim was to rectify every disorder in society; and the means by which this was to be effected, was the possession of unlimited power. Had the jesuits succeeded in their plan, they must have become the scourge of mankind; as it happened, they were checked, by those with whose interests they interfered, while their colossal growth was yet in a state of infancy. No other religious order affords a parallel to this; for, while those who give themselves only to devotion and religious contemplation present few distinguishing traits, the society of Jesus early raised itself to a degree of historical importance unparalleled in its kind. Their privileges and immunities were almost unbounded; and they were exempt from all episcopal and civil jurisdiction and taxes, so that they acknowledged no authority but that of the pope and the superiors of their order. The order was expelled in England in 1604; Venice, 1606; Portugal, 1759; France, 1764; Spain and Sicily, 1767; and abolished, by Clement XIV., 1773. It has since, however, been restored; and, strange to say, that even in this Protestant country (such is the tolerating spirit of the British constitution) they have a college at Stonyhurst, near Preston in Lancashire, with an academy of 500 pupils, and several smaller boarding-schools, from which they carry on, with success, the propagation of the Catholic faith.

JET, in natural history, a solid, dry, opaque, inflammable substance, found in large detached masses, of a fine and regular structure, having a grain like that of wood, splitting more easily horizontally than in any other direction, very light, moderately hard, not fusible, but readily inflammable, and burning a long time with a fine greenish flame. It takes a good polish, attracts light substances, and appears to be electric, like amber; hence it has been called *black amber*. It is frequently used for ornamental purposes, buttons, bracelets, snuff-boxes, &c. Some mineralogists consider it intermediate between coal and bituminous wood.

JET D'EAU *(French)*, in hydraulics, artificial fountains, made by compressed air, and forced, by a syringe, into a vessel formed for the purpose. A jet of any kind being fixed where the syringe was, the fountain, when the cock is turned, will play to a considerable height, according as more or less air is forced into the vessel.

JET'TY, a small pier or projection into a river for narrowing it, and raising the water above that place.

JEU D'ESPRIT *(French)*, a witticism, or unexpected association of ideas.

JEWS, the descendants of Abraham, once an independent tribe in Palestine, but dispersed by the Romans; yet still distinguished by their religion, peculiar pursuits, and primitive customs. They are the negotiators of money between all nations, and everywhere distinguished for their successful enterprize and accumulations of wealth. They have, however, lost the distinction of twelve tribes, though perhaps more numerous than at any period. [See JUDAISM.]

JEW'S'-HARP, an instrument of music, of a very imperfect character, which, placed between the teeth and by means of a spring struck by the finger, gives a sound which is modulated by the breath. By some it has been called the *jaw's-harp*, because the place where it is played upon is between the jaws.

JEW'S'-STONE, the elevated spine of a very large egg-shaped sea-urchin petrified. Its colour is a pale dusky gray, with a tinge of dusky red.

JIB, the foremost sail of a ship, extended from the outer end of the *jib-boom* towards the fore-top-mast-head. In sloops it is on the bowsprit, and extends towards the lower mast-head. Beyond the jib-boom is sometimes extended the *flying-jib-boom*.

JIBAY'A, in zoology, an American serpent of the largest kind.

JIG'GER, in a ship, a rope of about five feet long, with a block at one end and a sheave at the other, used to hold on the cable when it is heaved into the ship by the windlass.

JOB, or *the book of Job*, a canonical book

AT THE END OF THE 16TH CENTURY, THE JESUITS HAD OBTAINED THE DIRECTION OF THE EDUCATION OF YOUTH IN EVERY CATHOLIC COUNTRY.

WHOLE TREES CONVERTED INTO PURE JET HAVE BEEN DISCOVERED AT MONTPELLIER, AND THEIR SPECIES CORRECTLY DETERMINED.

of the Old Testament, containing the narrative of a series of misfortunes which happened to a man named Job, as a trial of his patience and fortitude; together with conferences which he held with his several friends on the subject of his misfortunes, and the manner in which he was restored to happiness. Many of the Jewish Rabbins pretend that this relation is purely a fiction: others think it a simple narrative of a matter of fact; while a third class of critics acknowledge that the ground-work of the story is true, but that it is written in a poetical style, and decorated with peculiar circumstances, to render the narration more profitable and interesting. Such is the opinion of Grotius, who supposed that the events recorded in it happened in Arabia, while the Hebrews wandered in the desert. The whole narrative is characterized by simplicity of manner and intensity of feeling, combined with pure and lofty sentiments, illustrating, in a striking manner, the nature of man and the providence of God.

JOHN (St.) THE EVANGELIST, the author of the Gospel which bears his name, of the book of Revelations, which he wrote while an exile in the isle of Patmos, and of three Epistles. He was emphatically called "the disciple whom Jesus loved;" and he was one of the most pure and estimable characters mentioned in the New Testament.

JOHN THE BAPTIST, the inspired harbinger of the Messiah. His zeal, as one who came to "prepare the way" of a greater and more glorious prophet, was equalled only by his self-denial and humility. He at last fell a victim to his independence and severe virtues, being beheaded by order of Herod Antipas, tetrarch of Galilee, to gratify a vindictive woman. His disciples are said to have been the founders of the sect of *Sabians*.

JOIN'ER, a mechanic who makes and fits together the several pieces of wood which have been prepared for each other. He differs from the carpenter, inasmuch as he does the finer work, that requires more skill.

JOINT, in anatomy, the place where any bone is articulated or joined with another. ——*Joint*, in masonry, the separation between the stones which is filled with mortar.——In joinery, the parts where two pieces of wood join.——In botany, the knot in the stalk of a plant.——Also, a limb that is cut from the carcass of an animal by a butcher.

JOINT STOCK COMPANIES, commercial associations, having a stock or fund formed by the union of several shares from different persons. In such associations the shareholders gain or lose according to the number of shares they hold. In an article generally favourable to "joint-stock companies," in the "Conversations Lexicon" (Glasgow edition), it is remarked, that "whatever their form, and however extensive or limited the liability of their members, these companies are subject to one abuse, which grows out of their very nature and constitution, and cannot therefore be wholly prevented. They are liable to be used by fraudulent or over-sanguine people, *as bubbles*. The fact of their being subject to such perversion, produces a strong and unjust prejudice against them in the minds of many persons. There is no institution or form of association that is free from abuses and perversions. The engines of greatest power act the most destructively when their powers are wrongly directed, or when they are deranged in their action; but this is no ground of argument against making use of them. *It is only a reason for precautions and regulations.*"—[See South-Sea Bubble.]

JOINT-TEN'ANCY, in law, a tenure of estate by unity of interest, title, time, and possession.

JOIN'TURE, in law, a wife's separate estate, secured by will, or by marriage settlement. In other cases the wife inherits one third.

JO'NAH, *prophecy of*, a canonical book of the Old Testament, in which it is related that Jonah, about the year 771 B.C., was ordered to go and prophesy the destruction of the Ninevites, on account of their wickedness. But instead of obeying the divine command, he embarked for Tarshish, when a tempest arising, the mariners drew lots to determine who was the cause of it, and as the lot fell to him he was thrown into the sea, and was swallowed by a great fish, which, after three days, cast him on the shore. After this he boldly preached to the people of Nineveh, and predicted their destruction; but which, on account of their repentance, was averted. Jonah, dreading the suspicion which might attach to him as a false prophet, retired to a mountain at a distance from the city, where he learnt the folly and unreasonableness of his own discontent. It may be observed that some critics consider this book as a collection of traditions, collected after the destruction of Nineveh, while others treat it as a mere allegorical poem.

JON'QUIL, in botany, a plant of the genus *Narcissus*, the flowers of which are either single or double, and are much esteemed for their sweet scent.

JOSH'UA, a canonical book of the Old Testament, containing a history of the wars and transactions of the person whose name it bears. This book is divisible into three parts, the first of which is a history of the conquest of Canaan: the second, which begins with the 12th chapter, is a description of that country, and the division of it among the tribes: and the third, comprised in the last two chapters, contains the renewal of the covenant which he caused the Israelites to make, and the death of their victorious leader.

JOUR'NAL, any book in which is kept an account of what passes in the day.—"It is singular," says Byron, "how soon we lose the impression of what ceases to be constantly before us: a year impairs; a lustre obliterates." We would not, indeed,

THE POLITICAL DESIGN OF THE JUBILEE WAS TO PREVENT THE TOO GREAT OPPRESSION OF THE POOR, AS WELL AS THEIR PERPETUAL SLAVERY.

NO ENGLISH JUDGE CAN PASS A SENTENCE GREATER THAN THE LAW PRESCRIBES; BUT HE MAY DIMINISH THE EXTREME SEVERITY OF THE LAW.

recommend persons to keep a record of all the trivial occurrences in which they are engaged, nor to fill a book with sentimental twaddle or common-place conversation; but a brief journal of useful facts, dates, descriptions, &c. may afford both interesting and valuable reminiscences in future years, and will well repay the trouble.——*Journal*, in merchants' accounts, a book wherein every thing is posted out of the waste-book. ——Among publishers and booksellers, a periodical work, either daily, weekly, or monthly, &c. —— In navigation, a book wherein is kept an account of the ship's course, winds, weather, &c.

JU'BILEE, a grand festival celebrated every fiftieth year, by the Jews, in commemoration of their deliverance out of Egypt. At this festival, which was a season of joy, all debts were to be cancelled; all bond-servants were set free; all slaves or captives were released; and all estates which had been sold reverted to the original proprietors or their descendants.——In imitation of the Jewish jubilee, the Romish church instituted a year of jubilee, during which the popes grant plenary indulgences, &c.

JU'DAISM, the religious doctrines and rites of the Jews, a people of Judah, or Judea. These doctrines and rites are detailed in the five books of Moses, hence called *the law*. The *Caraites* acknowledge no other; but the *Rabbinists*, the second of the two sects of Jews, add those inculcated by the *talmud*. The following is a summary of the religious creed of the Jews: 1, that God is the creator and active supporter of all things; 2, that God is ONE, and eternally unchangeable; 3, that God is incorporeal, and cannot have any material properties; 4, that God shall eternally subsist; 5, that God is alone to be worshipped; 6, that whatever has been taught by the prophets is true; 7, that Moses is the head and father of all contemporary doctors, and of all those who lived before and shall live after him; 8, that the law was given by Moses; 9, that the law shall always exist, and never be altered; 10, that God knows all the thoughts and actions of man; 11, that God will reward the observance and punish the breach of his law; 12, that the Messiah is to come, though he tarry a long time; and, 13, that there shall be a resurrection of the dead when God shall think fit. These doctrines, commonly received by the Jews to this day, were drawn up about the end of the eleventh century by the famous Jewish rabbi Maimonides.

JUDGE, an officer who decides causes and prosecutions at law. In the British polity, the title *judge* is retained, where, it should seem, that of *president* would more truly express the functions of the officer who bears it. In chancery, in the ecclesiastical courts, and in the court of admiralty, the judge really *judges;* but in the courts of law, civil and criminal, the *jurors* are the actual judges. There the judge, as he is denominated, performs a very important duty, but he does not *judge*. He maintains the law, he puts the evidence and pleadings in a compendious point of view; but he submits the question of *judgment* to the jury.—In England there are commonly said to be twelve judges, namely, the Lord Chief Justice of the King's Bench; the Lord Chief Justice of the Common Pleas; the Lord Chief Baron of the Exchequer; the three Puisne or inferior Judges of the two first courts; and the Puisne Barons of the latter court. The Chief Justices are installed or placed on the bench by the Lord Chancellor, and the Puisne Judges by the Lord Chancellor and the Chief Justices.

JUDG'ES, THE BOOK OF, a canonical book of the Old Testament, so called from its relating the state of the Israelites under the administration of many illustrious persons who were called judges, from the circumstance of their being both the civil and military governors of the people. The power of the judges extended to affairs of peace and war. They were protectors of the laws, defenders of religion, avengers of all crimes; but they could make no laws, nor impose any new burthens upon the people. They lived without pomp or retinue, unless their own fortunes enabled them to do it; for the revenues of their office consisted in voluntary presents from the people. They continued from the death of Joshua till the beginning of the reign of Saul.

JUDG'MENT, in metaphysics, a faculty of the soul, whereby it compares ideas, and perceives their agreement or disagreement. ——In law, the sentence or doom pronounced in any cause, civil or criminal, by the judge or court by which it is tried. Judgments are either interlocutory, that is, given in the middle of a cause on some intermediate point, or final, so as to put an end to the action.

JU'DICES SELECTI, in Roman antiquities, were persons summoned by the prætor, to give their verdict in criminal matters in the Roman courts, as juries do in ours. No person could be regularly admitted into this number till he was twenty-five years of age. *Sortitia Judicum*, or impanelling the jury, was the office of the *Judex Quæstionis*, and was performed after both parties were come into court, for each had a right to reject or challenge whom they pleased, others being substituted in their room.

JUGULA'RES, in ichthyology, an order of fishes in the Linnæan system, including those that have the ventral fins placed before the pectoral, as the cod, the whiting, the haddock, &c.

JU'GULAR VEINS, in anatomy, veins which run from the head down the sides of the neck, and are divided, from their situation, into external and internal. The *external*, or *superficial jugular vein*, receives the blood from the frontal, angular, temporal, auricular, sublingual, and occipital veins. The *internal*, or *deep-seated jugular vein*, receives the blood from the lateral

sinuses of the dura mater, the laryngeal and pharyngeal veins. Both jugulars unite, and form, with the subclavian vein, the superior vena cava, which terminates in the superior part of the right auricle of the heart.

JU'JUBE, a half-dried fruit of the plum kind; about the size and shape of an olive, the produce of the *Rhamnus zizyphus* of Linnæus. Jujubes, when in perfection, have an agreeable sweet taste, and in the southern parts of Europe, where they are common, they make an article of food in their recent state, and of medicine when half dried.

JU'LIAN PE'RIOD, in chronology, signifies a revolution of 7980 years, which arises from multiplying the solar cycle, the cycle of the moon, and the cycle of indiction into one another. This period is of great use, as the standard and general receptacle of all other epochas, periods, and cycles: into this as into a large ocean, all the streams of time discharge themselves, yet so as not to lose their peculiar characters; and had historians remarked the number of each cycle in each year respectively, there could have been no dispute about the time of any action or event in past ages.—When the Christian era commenced 4713 years of the Julian period were elapsed, 4713 therefore being added to the year of our Lord, will give the year of the Julian period.

JULY', the seventh month of the year. It was the fifth month of the old Roman year, and known by the name of *Quintilis;* but received the name of July in compliment to Julius Cæsar, who reformed the calendar, in such a manner, that this month stood as it does now with us, the seventh in order.

JUN'CUS, in botany, a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*. The species consists of different kinds of rushes, and are mostly perennials.

JUNE, the sixth month of the year, in which is the summer solstice. It was the fourth month of the old Roman year, but the sixth of the year as reformed by Numa and Julius Cæsar. Some suppose it received its name in honour of Junius Brutus. It was looked upon as under the protection of Mercury.

JU'NIPER-TREE, the *Juniperus communis*, the berries of which are esteemed as a stomachic, carminative, and diuretic. From this tree has also been obtained a concrete resin, which has been called sandarach or gum juniper. It exudes in white drops, more transparent than mastic. It is almost totally soluble in alcohol, with which it forms a white varnish that dries speedily. Reduced to powder, it is called *pounce*, which prevents ink from sinking into paper where erasures have been made. ——The *Juniperus lycia* is the plant which affords the true frankincense *(olibanum)*. In ancient times it was in great repute as a medicine for affections of the head and breast; but it is now superseded by myrrh, &c. —— *Juniperus sabina*, or Savin, is a powerful and active medicine, particularly in promoting the fluid secretions; but its heating qualities render it hurtful, unless used with the greatest caution.

JU'PITER, in astronomy, the largest of the planets, and the most brilliant excepting the planet Venus. Jupiter revolves about the sun at the distance of 493 millions of miles from that body, and his periodical revolution is estimated at 4330 days, 14 hours, 39 min., 2 sec., or about twelve of our years. His longest diameter is nearly 90,000 miles in length; and the length of his day and night is equal to somewhat less than ten of our hours. It has therefore been calculated that this planet moves in his orbit at the rate of 25,000 miles in an hour, and that his equatorial parts are carried as swiftly as this round the axis, which is 25 times faster than the similar parts of our earth. Jupiter is surrounded with what are called by us his zones or belts, but which have been supposed to be clouds. The axis of Jupiter is so nearly perpendicular to the plane of his orbit that he has little change of seasons. The difference in the length of his polar and equatorial diameters is equal to 6000 miles, the former being to the latter as 12 to 13. This is evidently occasioned by the quick motion round his axis. Jupiter has four satellites revolving about him; these are frequently eclipsed in the shadow of their primary, or hidden behind his body, and the great subserviency of these eclipses to geography and navigation, has occasioned the motions of the satellites to be very carefully observed.

JURISCON'SULT, a master of Roman jurisprudence, who was consulted on the interpretation of the laws.

JURISDICTION, in its most general sense, is the power to make, declare, or apply the law; when confined to the judiciary department, it is what we denominate the *judicial power*, the right of administering justice through the laws. Inferior courts have jurisdiction of debt and trespass, or of smaller offences; the supreme courts have jurisdiction of treason, murder, and other high crimes.

JURISPRU'DENCE, the science which gives a knowledge of the laws, customs, and rights of men in a state or community, necessary for the due administration of justice—a most important and highly useful study.

JU'RY, in law, a certain number of persons, sworn to decide justly on the matter before them. The origin of the trial by jury has been traced back to a very early period in British history, and seems, indeed, in some form, to have been used time out of mind. The constitution of England, in committing the administration of justice to the hands of juries, has subjected them to no restraint that can prevent the free discharge of their duty. They are to decide, not only upon the fact, but upon the criminality of the fact. It is also an established maxim, that a juror, in giving his verdict, is to be governed by nothing but his own opinion. Chief-justice Hales has the following passage in his History

TRIAL BY JURY IS THE DISTINGUISHING PRIVILEGE OF EVERY BRITON; BY IT THE MEANEST SUBJECT IS AS SAFE AS THE HIGHEST.

ALL THE OPERATIONS, EXAMINATIONS, AND OTHER PROCESSES IN A CRIMINAL TRIAL, ARE TO BE PERFORMED IN THE PRESENCE OF A JURY.

of the Common Law of England, chap. 12. § 11. "In this recess of the jury, they are to consider their evidence, to weigh the credibility of the witnesses, and the force and efficacy of their testimonies; wherein, as I before said, they are not precisely bound to the rules of the civil law, *viz.* to have two witnesses to prove every fact, unless it be in cases of treason, nor to reject one witness, because he is single; or always to believe two witnesses, if the probability of the fact does upon other circumstances reasonably encounter them; for the trial is not here simply by witnesses, but *by jury*; nay, it may so fall out, that a jury upon their own knowledge may know a thing to be false, that a witness swore to be true, or may know a witness to be incompetent or incredible, though nothing be objected against him—and may give their verdict accordingly." It is a striking and pleasing observation of De Lolme, that "the consequence of the institution of Juries is, that no man in England ever meets the man of whom he can say, 'that man has a power to decide upon my death or life.'" Juries are of several kinds; among these, there are, in the polity of Britain, *grand* and *petty* juries, in criminal cases; and *common* and *special* juries in civil.——The *Grand Jury* consists of a body of men of some consideration in their county, summoned by the sheriff for every session of the peace, every commission of oyer and terminer, and of general gaol delivery, and to whom all indictments are preferred. The summons of a grand juror requires him, in general terms, "to attend, and inquire, present, do, and execute, all those things, which shall be then and there required of him." The grand-jury must consist of twelve persons at least, and not more than twenty-three; that twelve may be a majority. The members are instructed in the articles of their inquiry, by the justice who presides on the bench. They then withdraw, to sit and receive indictments; and they are only to hear evidence on the part of the prosecution: for the finding an indictment is merely in the nature of an inquiry or accusation, which is afterward to be tried and determined; and the grand-jury are only to inquire, whether there be sufficient cause to call upon the party to answer it. Formerly, the grand jury used to indorse their decision upon the indictment, in the Latin tongue, but now, they write upon an indictment which they reject, either the words, "Not a true bill," or "Not found," and upon one, of the truth of which they are satisfied, "A true Bill."——The *Petit* or *Petty Jury* consists of twelve persons, and no more, for the trial of all criminal offences, and of all issues of fact in civil cases of the common law. The qualifications of petty jurors do not differ, generally, from those required as to grand jurors, their duties being equally important, and requiring equal intelligence. When the cause is called for trial, if all the jurors do not appear, or any of them are justly objected to and set aside, the deficiency may be supplied from among the bystanders, having suitable qualifications, which is called taking jurors *de talibus circumstantibus*, from which circumstance the persons thus selected are called *talesmen*.——*Special Jury*, a panel composed of persons, *especially* fitted by the kind of knowledge they possess, to try some peculiar question. There are also special juries in cases where one of the parties is above the common rank.

JU'RY-MAST, a temporary or occasional mast, used in the place of the foremast or mainmast when it is broken down by a storm.

JUS'TICE, in law, the equitable decision of suits and prosecutions. The laws of England have frequently been made the subject of severe animadversion; and it is not to be wondered at, if a system formed of so many broken parts, of ordinances promulgated at so many different periods, adapted to so many different stages of society, and indeed, made up, in great part, of usage and precedents, and, in civil cases, liable to be changed by every new decision, should appear to those, who look for precision and order, confused and faulty: but whatever censure may be passed upon the unwieldy volumes of this code, calumny herself cannot utter a breath against its administration. The law of England may be irregular; but its justice is sacredly correct.——Justice is *distributive* or *commutative*. Distributive justice belongs to magistrates or rulers; and consists in distributing to every man that right or equity which the laws and the principles of that equity require. Commutative justice consists in fair dealing in trade and mutual intercourse between man and man.

JUSTICE OF THE PEACE, a judicial magistrate, or person appointed by the queen's commission to keep the peace of the county in which he resides. Some of these, who are of superior rank or quality, are called *justices of the quorum*, and without the presence or assent of these, or at least one of them, no business of importance can be dispatched. A justice of the peace, though not high in rank, is an officer of great importance, as the first judicial proceedings are had before him in regard to arresting persons accused of grave offences; and his jurisdiction extends to trial and adjudication for small offences.

JUSTI'CIARY, or *Court of Justiciary*, in Scotland, a court of supreme jurisdiction in all criminal cases.

JUSTIFICA'TION, in law, the showing good reason in a court, why one has done the thing for which he is called to answer. *Pleas in justification* must set forth some special matter: thus, on being sued for a trespass, a person may justify it by proving that the land is his own freehold; that he entered a house, in order to apprehend a felon; or by virtue of a warrant, to levy a forfeiture; or, in order to take a distress.——In theology, *justification* signifies remission of sin and absolution from guilt and punishment, or an act of free grace by

which God pardons the sinner and accepts him as righteous, on account of the atonement of Christ.

JU'RIS U'TRUM, in law, a writ in behalf of a clergyman whose predecessor has alienated the lands belonging to his church.

JUS, (*Latin*) in its general acceptation, signifies that which is right or conformable to law.——*Jus accrescendi*, in law, the right of survivorship between two joint tenants. ——*Jus coronæ*, signifies, in general, the rights of the crown. These are a part of the laws of the kingdom, though they differ in many things from the general laws relating to the subject.——*Jus duplicatum*, is a double right, and is used when a person has the possession of a thing, as well as a right to it.——*Jus divinum*, is that which is ordered by a revelation, in contradistinction to that which is ordered by reason; but it is evident that the distinction exists only in the form, and not in the essence, because that which is ordered by our reason is to be referred to God, as its origin, equally with that which is decreed by revelation.——*Jus gentium*, the law of nations, or the laws established between different kingdoms and states, in relation to each other.——*Jus hereditatis*, the right or law of inheritance.——*Jus patronatus*, in the canon law, is the right of presenting to a benefice; or a kind of commission granted by the bishop to inquire who is the rightful patron of a church.——*Jus possessionis*, is a right of seisin or possession, as *jus proprietatis* is the right of ownership of lands, &c.——*Jus quiritium*, in antiquity, the fullest enjoyment of Roman citizenship. This is also called *Jus civile* and *Jus urbanum*. ——*Jus imaginis*, the right of using pictures and statues, similar to the modern right of bearing coats of arms, which was allowed to none but those whose ancestors or themselves had borne some curule office.

JUVENA'LIÆ, in Roman antiquity, a feast instituted for youth by Nero, when his beard was first shaven.

K.

K, the eleventh letter of the alphabet, is usually denominated a guttural, but is more properly a *palatal*, being formed by pressing the root of the tongue against the upper part of the mouth, with a depression of the lower jaw and opening of the teeth. It has the hard sound of *c* before *e* and *i*, where, according to the English analogy, *c* would be soft, as in the words *kept* and *king*: it is seldom at the end of words except in monosyllables, as *clock*, *back*, &c.; being generally omitted where it was formerly used, as in *music*, *public*, &c. It is used between a vowel and the silent *e* final, as *choke*, *broke*, &c. Before *n* the *k* is silent, as in *knife*, *knee*. It is borrowed from the Greek *kappa*, and was but little used among the Latins, perhaps never but in words borrowed from the Greek language. As a numeral K was put for 250, and with a stroke at the top, it stood for 250,000.

KAA'LING, in ornithology, a species of starling, common in China.

KALEI'DOSCOPE, an optical instrument for creating and exhibiting an infinite variety of beautiful figures, by presenting to the eye an ever-varying succession of splendid tints and symmetrical forms. It was invented by Dr. Brewster; and is chiefly used by calico-printers, potters, and carpet-manufacturers, who are thus supplied with an immense variety of patterns. In its most common form, the *Kaleidoscope* consists of a tin tube, containing two reflecting surfaces inclined to each other, at any angle which is an aliquot part of 360°. The eye-glass placed immediately against the end of the mirrors, as well as another glass similarly situated at the other end, are of common transparent glass. The tube is continued a little beyond this second glass, and, at its termination, is closed by a ground glass, which can be put on and off. In the vacant space thus formed, beads, pieces of coloured glass, and other small bright objects are put; and the changes produced in their position by turning the tube, give rise to the different figures.

KA'LI, in botany, *Salsola kali* or glasswort, a genus of marine plants, from which the *alkali* of commerce is procured by burning.

KAL'MIA, in botany, a beautiful North American genus of shrubs, called laurel, ivy-bush, calico-bush, &c., having coriaceous, ever-green, and cup-shaped flowers, of a fine rose or purple colour, disposed in large corymbs. It is naturally allied to *rhododendron*. The wood is very hard, susceptible of a fine polish, and resembles box. This shrub is in great request in our gardens, from the beauty of its flowers and foliage.

KAM'SIN, the name given to a hot and dry southerly wind, common in Egypt and the deserts of Africa, which prevails more or less for fifty days. On the approach of this wind the sky becomes dark and heavy, the air gray and thick, and filled with a dust so subtile that it penetrates every where. It is not remarkably hot at first, but increases in heat the longer it continues, during which time it causes a difficulty of breathing, and when at its highest pitch, will sometimes cause suffocation.

KANGAROO', in zoology, a singular ani-

mal peculiar to Australasia. The limbs of the Kangaroo are strangely disproportioned, the fore legs being small and short, whilst the hinder are long and powerful. It is four or five feet long, with a tail three feet; its usual position is standing on its hind feet, its fore feet being employed like those of the squirrel. It lives on vegetables, and, instead of walking, takes leaps of about fifteen feet. It is furnished, like the opossum, with a pouch in the abdomen, which is a receptacle for its young during the time of breeding, and is resorted to after the birth for the sake of warmth and protection. They use their tails and hinder feet as weapons of defence. When they are pursued and overtaken by dogs, they turn, and seizing them with their fore feet, strike them violently with their hinder limbs, thereby often destroying them. The flesh of these animals is said to be nutritious and savoury, somewhat resembling mutton.

KA'OLIN, in mineralogy, a sort of earth which is used as one of the two ingredients in porcelain. Its colour is white, with a shade of gray, yellow, or red.

KAR'PHOLITE, a recently-discovered mineral, of a fibrous structure and a yellow colour.

KECK'LING, among seamen, winding or twining small ropes about a cable or boltrope, to preserve them from galling.

KEDGE, or KEDG'ER, a small anchor, used to keep a ship steady when riding in a harbour or river.——*Kedging*, setting up the sails, and letting a ship drive with the tide when the wind is contrary to the tide.

KEEL, the lowest piece of timber in a ship, running her whole length from the lower part of her stem to the lower part of her stern post, and supporting the whole frame. Sometimes a second keel, or *false keel*, as it is called, is put under the first. A flat-bottomed vessel used on the river Tyne for bringing coals from Newcastle. ——In botany, the lower part of a papilionaceous corolla, inclosing the stamens and pistil.——A leaf is said to be *keeled* when it has a longitudinal prominence on the back.

KEEL'-HAULING, among seamen, a punishment of offenders at sea by letting them down from the yard-arm with ropes, and drawing them under the keel from one side to the other.

KEEL'SON, or KEL'SON, in naval architecture, a principal timber in a ship, laid withinside across all the timbers over the keel, and fastened with long bolts; so that it forms the interior or counterpart of the keel.

KEEP, a strong tower in old castles, where the besieged retreated in cases of extremity. It is also called the *donjon* or *dungeon*.

KEEP'ER, in law, an officer of different descriptions, as the *keeper of the great seal*, a lord by his office, and one of the privy council, through whose hands pass all charters, commissions, and grants of the king under the great seal; the *keeper of the privy seal*, through whose hands pass all charters, &c. before they come to the great seal. There is also the *keeper of the forests*, the *keeper of the touch*, an officer of the mint, &c.

KEEP'ING, a term used in various branches of the *fine arts*, to denote the just proportion and relation of the various parts. ——In painting, it signifies the peculiar management of colouring and *chiaro oscuro*, so as to produce a proper degree of *relievo* in different objects, according to their relative position and importance. If the lights, shadows, and half tints be not in proper *keeping*, that is, in their exact relative proportion of depths, no rotundity can be effected, and without due opposition of light, shade, and colours, no apparent separation of objects can take place.

KELP, the calcined ashes of a marine plant, sometimes called by the same name, but otherwise known by the denominations of sea-thongs, laces, and glass-wort; and which is a thick-leaved sort of *fucus* or seawrack. *Kali* is a species of this plant. Kelp is thrown on the rocks and shores of Scotland in great abundance; and, in the summer months, is raked together, and dried, as hay, in the sun and wind, and afterwards burnt, Since the duty has been taken off salt, and barilla has come into more general use from the same cause, the manufacture of kelp has greatly declined; but at one time not less than 20,000 tons of this article was annually made in Scotland and the adjacent isles.

KER'MES, in entomology, a species of the insect *coccus*, found in the excrescences of a species of oak-tree.——It is an article extensively used in dyeing, and inferior to nothing but cochineal for dyeing scarlet. *Kermes-grains*, as they are called, are the dried bodies of the female insects of the species *coccus ilicis*, which lives upon the leaves of the *quercus ilex* (prickly oak). In Germany, from the 9th to the 15th century, the rural serfs were bound to deliver annually to the convents, a certain quantity of kermes, (the *coccus polonicus*) among the other products of industry; and at that period this dye-stuff was called *vermiculus* in Latin, and *vermillion* in French. Kermes has been employed from time immemorial in India to dye silk, and was also used by the ancient Greek and Roman dyers; but since the introduction of cochineal, it has become an object of comparatively trifling importance. —— *Kermes-mineral*, in pharmacy, a preparation of antimony, so called on account of its red colour, resembling that of the kermes.

KESTREL, in ornithology, a fowl of the genus *Falco*, with yellow-legs, a brown back, a spotted breast, and a rounded tail, broad towards the end. It is a very beautiful bird, about the size of a pigeon, and very bold. It builds in hollow oaks, and feeds on quails and other small birds.

KETCH, a vessel with two masts, a main and mizen-mast, usually from 100 to 250 tons burden. Ketches are generally used as yachts, or as bomb-vessels; the latter, which are built remarkably strong, are furnished with all the apparatus necessary for carrying on a vigorous bombardment.

THE DISCONTINUANCE OF THE KELP MANUFACTURE HAS PRODUCED THE UTMOST DESTITUTION AMONG THE PEASANTRY OF THE SCOTTISH ISLES.

KETCH'UP, or CATS'UP, a sauce or vegetable gravy, extracted from pickled mushrooms, walnuts, or tomatos, &c. Dr. Kitchener, who in matters of this kind may be supposed to speak like an accomplished connoisseur, says, "Mushroom gravy approaches the flavour of meat gravy more than any other vegetable juice, and is the best substitute for it in meagre soups and *extempore* gravies!"

KEY, an instrument for shutting or opening a lock; viz. a bent lever by which the bolt of a lock is turned, with subdivisions according with the wards of the locks.—— In music, the name of the fundamental note or tone, to which the whole piece is accommodated, and in which it usually begins and always ends. There are but two species of keys; one of the major, and one of the minor mode, all the keys in which we employ sharps or flats being deduced from the natural keys of C major and A minor, of which they are mere transpositions.—— The *keys* of an organ or pianoforte, are movable projecting levers, made of ivory or wood, so placed as conveniently to receive the fingers of the performer, by which the mechanism is set in motion and the sounds produced.

KEY'-STONE, in architecture, the name for those stones which form the sweep of an arch, but more particularly the last or middle stone placed on the top of the arch or vault.

KHAN, an Asiatic governor. In the north of Asia this title expresses the full regal dignity; but there are also *khans* of provinces, cities, &c. "This is the word," says Sir William Jones, "so variously and so erroneously written by Europeans. The sovereign lord of Tartary is neither the *cham*, as our travellers call him, nor the *han*, as Voltaire will have it; but the *khán* or *cán*, with an aspirate on the first letter."

KID'NAPPING, the forcible seizing and taking away a man, woman, or child, in order to carry them abroad. This is an offence at common law, and punishable by fine, imprisonment, and pillory.

KID'NEY-BEAN, a garden pulse, so named from its resembling a kidney in shape: it has a papilionaceous flower, the pistil of which becomes a long pod, that is eaten before the seeds are fully formed.

KID'NEYS, in anatomy, two oblong flattened viscera, or glands, the office of which is to separate the urine from the blood. One of these glands lies on the right, and the other on the left of the back-bone. At the middle of each kidney, where the blood-vessels enter, is a large membranous bag, called the pelvis, which diminishes like a funnel, and forms a long canal, (the ureter) that conveys the urine from the kidney to the bladder. Diseases of the kidneys are generally occasioned by excess of some kind.

KIL'LAS, in mineralogy, an argillaceous stone of a pale gray or greenish gray, of a lamellar or coarsely granular texture, found in Cornwall.

KIL'DEE, in ornithology, a species of plover, common in America.

KILN (pron. *kil*), a large oven, of brick or stone, for the purpose of burning, heating, or hardening any thing.

KIL'OGRAMME, or KIL'OGRAM, in the new system of French weights and measures, a thousand *grammes*. The kilogram is equal in weight to five drams and a half.

KILOM'ETER, in the French system of measures, a thousand meters; nearly equal to a quarter of a French league.

KING, in ancient and modern history, the name given to an officer who exercises the supreme functions of political government. Kings are *absolute* monarchs, when they possess the powers of government without control, or the entire sovereignty over a nation; and *limited* monarchs, when their power is restrained by fixed laws; *hereditary*, when they hold the powers of government by right of birth or inheritance; and *elective*, when raised to the throne by choice.——A king of England's power is limited. "He has the prerogative of commanding armies and equipping fleets;—but without the concurrence of his parliament he cannot maintain them. He can bestow places and employments;—but without his parliament he cannot pay the salaries attending on them. He can declare war; but without his parliament it is impossible for him to carry it on. In a word, the royal prerogative, destitute as it is of the power of imposing taxes, is like a vast body which cannot of itself accomplish its motions; or, if you please, it is like a ship completely equipped, but from which the parliament can at pleasure draw off the water and leave it a-ground,—and also set it afloat again by granting subsidies." The law ascribes to a king of England, in his *political* capacity, immortality, for "the king never dies;" and on his decease, which is called his demise, his regal dignity is vested, without any interregnum or interval, at once in his heir.

KING AT ARMS, in heraldry, an officer of great antiquity, whose business is to direct the heralds, preside at their chapters, and have the jurisdiction of armoury. In England there are three kings of arms; *Garter*, *Clarencieux*, and *Norroy*; the first is called *principal king at arms*, the two others *provincial kings*: the latter [*northroy*] officiates north of the Trent. There are also *Lion* king at arms for Scotland, and *Ulster* king at arms for Ireland,

KING'DOM, in natural history, a general division of natural objects, as the *animal*, the *mineral*, and the *vegetable kingdoms*, in the Linnæan system.——In Scripture, by *kingdom*, or God's *kingdom*, is meant the government or universal dominion of God.

KING'FISHER, in ornithology, the *Alcedo* of Linnæus, a genus of birds, distinguished by a long, straight, sharp bill; strong feet; wings rather short; body thick and compact; head large and elongated; and plumage thick and glossy. The kingfisher frequents the banks of rivers,

where it patiently watches till a fish approaches its station, when it dives into the water and brings up its prey, which it soon devours. [See HALCYON.]

KINGS, BOOKS OF, two canonical books of the Old Testament, so called because they contain the history of the kings of Israel and Judah, from the beginning of the reign of Solomon, down to the Babylonish captivity, for the space of near six hundred years.

KING'S BENCH [BANCUS REGIUS), so called because the king used formerly to sit there in person. It is the supreme court of common law in this kingdom, consisting of the Lord Chief Justice, and three puisne or inferior judges, who hear and determine, for the most part, all pleas which concern the crown. The jurisdiction of this court is very extensive. Its justices are sovereign justices of oyer and terminer, of gaol delivery and of eyre; supreme conservators of the peace; and coroners throughout England, some provincial jurisdictions excepted. They have cognizance of all matters of a criminal and public nature, judicially brought before them, to give remedy either by the common law, or by statute; and their power is original and ordinary: that is, after the king has appointed them, they do not derive their jurisdiction from him, but from the law. Whatever crime is against the public good, though it does not injure any particular person, comes within the scope of the justice of this court; and no subject can suffer any kind of unlawful violence or injury to his person, liberty, or possessions, but he may here have a proper remedy: not only by way of satisfaction in damages, but by the exemplary punishment of the offender: for this court is considered as the guardian of the morals of all the subjects of the realm. It is in the discretion of this court to inflict fine and imprisonment, or punishment more severe, on offenders. It may commit to any prison it shall think proper; and the law allows no other court to remove or bail persons it imprisons: but this court may grant a *habeas-corpus* to relieve persons imprisoned by any other authority or means. This court can try all causes capable of coming before a jury, in many of which the king [or queen] is plaintiff; but the *common-pleas*, only those between subject and subject. [Since the accession of queen Victoria, it has been customary to designate this the court of *Queen's Bench*; a practice which has our hearty commendation; and we sincerely hope that no ultra-loyalist will imagine that we are deficient in respect for our gracious sovereign, because we have not happened to place this article under the letter Q.]

KING'S EVIL, in medicine, a scrofulous disease, in which the glands are ulcerated. The gift of curing this disease was formerly attributed to the kings and queens of England, and had its origin in the time of Edward the Confessor. The practice of *touching for the evil* (as it was termed) is now abolished.

KING'S SILVER, in law, money due to the king in the court of common-pleas, for a license there granted to any man for passing a fine.

KI'NO, in medicine, a gum resin obtained from a tree growing on the banks of the river Gambia, in Africa. On wounding its bark, the fluid kino immediately issues drop by drop, and, by the heat of the sun, is formed into hard masses. It is now in common use, and is one of the most efficacious vegetable astringents, or styptics, in the materia medica.

KI'OSK (a Turkish word), a kind of summer-house, or open pavilion, with a tent-shaped roof, and supported by pillars. *Kiosks* have been introduced from Turkey and Persia into European gardens, which they greatly serve to embellish.

KIP'PER, a term applied to a salmon when unfit to be taken, and to the time when they are so considered.

KIRK, in Scotland, a church.——*Kirkman*, one of the church of Scotland.——*Kirk-sessions*, an inferior church-judicatory, in Scotland, consisting of the ministers, elders, and deacons of a parish.

KIRSCH'WASSER, a spirituous liquor obtained by fermenting and distilling bruised cherries, called *kirschen* in German.

KIT'-CAT, a term applied to a portrait three-fourths less than a half-length. The word originated with a club in London, to which Addison and Steele belonged; and was so called from one Christopher Cat, a pastrycook, who served the said club with mutton pies!

KITE, a bird of prey, of the falcon kind, remarkable for gliding through the air without often moving its wings. The tail is forked, which distinguishes it from all other British birds of prey.——*Kite*, a plaything for boys, consisting of a slight wooden frame covered with paper, and constructed so as to rise in the air, where by the aid of a long string it may be allowed to fly at the pleasure of the one who holds it.

KNEE'-PAN, in anatomy, the *patella*, a little round bone placed in the fore part of the knee.

KNEES, in naval architecture, pieces of timber bowed like a knee, which bind the beams and side timbers together.——*Knees*, in Russia, nobles of the first class descended from the former ruling families of particular provinces of the Russian empire.

KNIGHT, a title of honour, originally bestowed on every young man of rank or honour, after he was admitted to the privilege of bearing arms. It is now an order of gentlemen next to baronets, or a mere honorary distinction, which entitles the person on whom it is conferrred to be styled *Sir*, and his wife *Lady*. A knight is now made by the sovereign touching him with a sword as he kneels, and saying "Rise up, Sir Thomas Phillips;" or whatever may be the name of him who receives the honour of knighthood.—[There certainly has been no man, in modern times, who more truly deserved some especial mark of his sove-

reign's favour, than the gentleman whose name we have here taken the liberty to introduce; and we make no apology to our readers for so doing; being convinced that we only respond to the feelings of every right-minded Briton in thus offering him our humble and unaffected tribute of gratitude for his heroic conduct, when, as the mayor of Newport, in 1839, he so effectually resisted the misguided Chartists, and thereby prevented scenes of tumult, which, but for his bold and judicious measures, might have convulsed the whole kingdom. "*Palmam qui meruit ferat.*"]

KNIGHT-ER'RANT, or *wandering Knight*, one who, in the generous enthusiasm of chivalry, set out, attended by his esquire or shield-bearer, with the design of exposing his life, wherever wrong was to be redressed. The chivalrous age in which this profession was taken up, demanded such exertions; and though poetry has given an air of fiction to the adventures of knights-errant, they are founded on truth.

KNI'GHTHOOD, the state or condition of a knight. This institution has given rise to three others, each of which is only a deviation from itself: thus, 1, The primitive objects of chivalry induced men to enter into intimate associations; whence sprung the several orders of knighthood. From these, by the degeneracy necessarily befalling all establishments, are derived the orders still subsisting in modern Europe. 2, The primitive dignity of chivalry gave birth to that species of knighthood as at present conferred. The two species here mentioned, however, are severally distinguished by historians, as *regular*, and *honorary*; of these, the first comprehend such as still adhere to their constitutions, as in requiring vows of celibacy, &c. and the second, those which are merely titular. The Teutonic order is an example of the former; the order of the Garter of the latter. 3, The union of chivalry with the feudal system, and the decay of both, gave rise to knight-service, and the compulsion of landholders to become knights. [See CHIVALRY.]

KNIGHT-MAR'SHAL, an officer in the royal household of Great Britain and Ireland, who has jurisdiction and cognizance of offences committed within the household and verge, and of all contracts made therein, a member of the household being one of the parties.

KNIGHT OF THE SHIRE, a member of parliament representing a *shire*, in contradistinction to a burgess, who represents a borough. A knight of the shire is so called, because, as the *terms* of the writ for election still require, it was formerly necessary that he should be a knight. This restriction was coeval with the tenure of knight-service, when every man who received a knight's fee immediately of the crown was constrained to be a knight; but at present any person may be chosen to fill this office who has a freehold estate in land worth £600 per annum.

KNIGHT'-SERVICE, a tenure of lands, instituted on the decline of the feudal spirit, with the view of reviving political vigour. It originally consisted in investiture of lands, upon express condition that the person so invested should serve in the wars of his lord. This duty was subsequently compounded for, by the payment of sums of money on various occasions; and, at length by statute 12 Car. II. the whole was abolished.

KNOT, in seaman's language, a division of the log-line which answers to half a minute, as a mile does to an hour, or it is the hundred-and-twentieth part of a mile. Hence, when a ship goes eight miles an hour, she is said to go eight *knots*.——*Knot*, in ornithology, a fen bird, the flesh of which is very delicious.

KNOUT, a mode of punishment in Russia, which at one time was exercised with the greatest possible barbarity, but which is now less cruel, though it at present consists of a severe scourging on the back with a leather strap, in the point of which wire is interwoven. Formerly, in addition to this, the nose was slit up, and the ears were cut off.

KNOWL'EDGE, that information which the mind receives, either by its own experience, or by the testimony of others. The beneficial use of *knowledge* is *wisdom*. That portion of *knowledge*, the truth of which can be demonstrated, is *science*.

KO'BA, in zoology, a species of antelope, with horns close at the base.

KO'BOB, in zoology, a venomous serpent of America.

KOL'LYRITE, in mineralogy, a variety of clay, the colour of which is either pure white, or slightly shaded with gray or yellow.

KON'ILITE, in mineralogy, a siliceous earth, in the form of a loose powder, and remarkably fusible.

KORAN. [See ALCORAN.]

KO'RIN, in zoology, an antelope with slender smooth horns.

KOU'MISS, or KU'MISS, an intoxicating liquor made by the Calmuc Tartars, by fermenting and distilling mare's milk.

KOUPH'OLITE, in mineralogy, a variety of *phrenite*, of a greenish white colour, translucent, glistening, and pearly. It is found in the Pyrenees.

KRA'KEN, an immense sea-monster, said to be seen occasionally on the coasts of Norway; but the accounts of it are so marvellous, that, rather than incur the charge of gross credulity ourselves, or an attempt to impose on the credulity of others, we shall merely copy a few lines from Pontoppidan, bishop of Bergen, who has described it at great length. "Its back or upper part," says he, "which seems to be in appearance about an English mile and a half in circumference, looks at first like a number of small islands, surrounded with something that floats and fluctuates like sea-weed. Here and there a large rising is observed, like sand-banks, on which various kinds of small fishes are seen continually leaping about, till they roll off into the water from the sides of it. At last, se-

veral bright points or horns appear, which grow thicker and thicker the higher they rise above the surface of the water; and sometimes they stand up as high and large as the masts of middle-sized vessels. It seems these are the creature's arms; and it is said, if they were to lay hold of the largest man of-war, they would pull it down to the bottom. After this monster has been on the surface of the water a short time, it begins slowly to sink again; and then the danger is as great as before, because the motion of his sinking causes such a swell in the sea, and such an eddy or whirlpool, that it draws every thing down with it." No one can read this account without being forcibly reminded of the wonderful stories we have heard of late years respecting the sea-serpents seen on the North-American coasts. And whatever may be the animal which has given rise to these stories, the *kraken* described by Pontoppidan can hardly be supposed to be a real existence. It has been supposed, and not without a show of great probability, that the account grew out of the appearance of rocks only visible at certain seasons, or of floating islands, &c. Yet that monsters of prodigious dimensions, dissimilar from any known species, have been met with in almost every quarter of the world, is certain; and every authenticated account of such, at least claims the attention of the naturalist.

KRE'OSOTE, in chemistry, the anti-putrescent principle of pyroligneous acid, is an oily, colourless, transparent liquid, possessing great refrangibility. Its odour is penetrating, disagreeable, and similar to that of smoked beef. This substance forms numerous interesting compounds with acids and alkalies; but of all the organic acids, the acetic seems to have the greatest affinity for kreosote, uniting with it in every proportion.

KU'FIC, the ancient letters of the Arabic, so called from Kufa, on the Euphrates.

KY'ANITE, a mineral found both massive and in regular crystals: its prevailing colour is blue, but it occurs also in various shades of gray, green, and bluish white. It is infusible by the common blowpipe.

L.

L, the twelfth letter of the English alphabet. It is a semi-vowel, formed in the voice by intercepting the breath between the tip of the tongue and the fore-part of the palate, with the mouth open. There is something of aspiration in its sound, and therefore our British ancestors usually doubled it, or added an *h* to it; as in *llan*, or *lhan*, a temple. In English words of one syllable it is doubled at the end, as in *all*, *wall*, *mill*, *well*, &c., but not after diphthongs and digraphs, as *foul*, *fool*, *prowl*, *growl*, *foal*, &c.; words of more syllables than one, as *foretel*, *proportional*, &c., are written with a single *l*. In some words *l* is mute, as in *half*, *calf*, *talk*, *chalk*. It may be placed after most of the consonants, as in *blue*, *clear*, *flame*, &c., but before none of them. As a numeral letter, L denotes 50; and with a dash over it, 50,000.

LA, in music, the syllable by which Guido denotes the last sound of each hexachord: if it begins in C, it answers to our A; if in G, to E; and if in F, to D.

LAB'ADISTS, a sect who lived in the 17th century, the followers of Jean de Labadie, who held that God can and does deceive men, that the observance of the Sabbath is not required, and other heretical opinions.

LA'BARUM, in Roman antiquity, the standard borne before the emperors; being a rich purple streamer, supported by a spear. It was the name given to the imperial standard, upon which Constantine, after his conversion, blazoned the monogram of Christ.

LAB'DANUM, or LAD'ANUM, a resin of the softer kind, though of too firm a consistence to be ranked among the fluid ones. It exudes from the leaves of the *Cistus ladanifera*, a shrub which grows in Arabia, Candia, and other parts of the Archipelago. It is used in medicine, chiefly in external applications.

LA'BEL, in heraldry, a fillet usually placed in the middle along the chief of the coat without touching its extremities. It is adorned with pendants; and when there are above three of these, the number must be specified in blazoning. This is an addition to the arms of a second brother, and is esteemed the most honourable of all differences.

LA'BIA, in anatomy, the lips, the red part of which is called *Prolabium;* the sphincter, *Orbicularis Labiorum;* and the cuticle, *Epithelium.*

LA'BIALS, in grammar, an epithet for those letters which are pronounced chiefly by means of the lips.——In anatomy, an epithet for the arteries and glands which belong to the lips.

LA'BIATE, or LA'BIATED, in botany, an epithet for monopetalous flowers, consisting of a narrow tube, with a wide mouth, divided into two or more lips.

LAB'ORATORY, a workshop or building properly fitted up with apparatus necessary for the various operations, processes, and experiments, that may be required by the practical chemist.——*Laboratory*, in military affairs, signifies a place where all sorts

LOCUS SIGILLI, THE PLACE OF THE SEAL.

"LABARUM" WAS THE NAME GIVEN TO THE IMPERIAL BANNER, UPON WHICH CONSTANTINE, AFTER HIS CONVERSION, BLAZONED THE MONOGRAM OF CHRIST.

of fire-works are prepared, both for actual service and experiments.——The word is also used to denote any place wherein a series of operations are performed; hence the stomach is called the grand *laboratory* of the human body.

LA'BOUR, bodily exertion in occupations by which subsistence is obtained, as in agriculture, manufactures, &c. The word is also applied to that degree of intellectual exertion or application of the mind which occasions weariness. In the former sense, however, its use is most legitimate.—It is somewhat curious to mark the progressive advance in the prices of labour during the last 500 years, with the prices of provisions; and satisfactory at the same time to know, that the wages of the labourer and artisan, of every description, have risen in a much greater proportion than wheat, by the price of which their wages were originally regulated. In the year 1352, 25 Edw. III. wheat was 1*s.* 10*d.* per bushel. The following are the rates of wages at that time, as established by law: Haymakers 1*d.* per day. A mower of meadows 5*d.* per day, or 6*d.* an acre. Reapers of corn, in the first week of August, 2*d.*, in the second, 3*d.* per day, and so till the end of August, without meat, drink, or other allowance, finding their own tools. For threshing a quarter of wheat or rye, 2¼*d.*; a quarter of barley, beans, peas, and oats, 1½*d.* A master carpenter, 3*d.* a day; other carpenters, 2*d.* a day. A master mason, 4*d.* per day; other masons, 3*d.* per day, and their servants 1½*d.* per day. Nearly a century after, *i. e.* in 1455, 23 Henry VI., the wages were—For a bailiff of husbandry, 23*s.* 4*d.*, per annum, and clothing of the price of 5*s.*, with meat and drink; chief hind, carter, or shepherd, 20*s.*, clothing 4*s.*; boy under 14 years, 6*s.*, clothing, 3*s.* Free mason, or master carpenter, 4*d.* per day; without meat or drink, 5½*d.* Master tiler or slater, mason or mean carpenter, and other artificers concerned in building, 3*d.* per day; without meat and drink, 4½d; every other labourer 2*d.* a day; without meat and drink 3½*d.*, after Michaelmas to abate in proportion. In time of harvest, a mower 4*d.* a day, without meat and drink 6*d.*; reaper or carter, 3*d.* a day, without meat and drink 5*d.*; woman labourer, and other labourers, 2*d.* a day, without meat and drink 4½*d.* per day.—— In the late "Factory Commission Report," the comparative prices of labour in different countries of Europe are thus stated:— The factory operative in England works 69 hours per week, for which, on an average, he has 11*s.* wages; in America, he works 78 hours, and has 10*s.*; in France he works from 72 to 84 hours, and has 5*s.* 8*d.*; in Switzerland he works from 78 to 84 hours, and has 4*s.* 5*d.*; in the Tyrol he works from 72 to 80 hours, and has 4*s.*; in Saxony he works 72 hours, and has 3*s.* 6d.; in Bonn, in Prussia, he works 94 hours, and has 2*s.* 6*d.*

LAB'YRINTH, a maze, or place full of intricate windings, which renders it difficult to find the way from the interior to the entrance. The labyrinth of Egypt, built by Psammeticus on the banks of the river Nile, contained, within the compass of one continued wall, one thousand houses and twelve royal palaces, all covered with marble; it had only one entrance, but innumerable turnings and windings, so that those who were in could not find their way out without a guide. There were also many other celebrated labyrinths in antiquity; such as those of Crete, Clusium, &c.——*Labyrinth*, in anatomy, that part of the internal ear behind the cavity of the tympanum.

LAC, LACK, or GUM-LAC, a concrete brittle substance (not a *gum*, though so called, but a *resin*). It is deposited on different kinds of trees in the East-Indies, by a species of insects of the cochineal kind. Some of the dead insects remaining in their cells give the whole a red colour. That sort of lac which is called *stick-lac*, is the wax adhering to small sticks or branches, and which is unprepared. This lac, when separated from the sticks, grossly powdered, and deprived of its colour, for the sake of the dyes, and other purposes, is called *seed-lac*. When the stick-lac is freed from its impurities by melting it over a gentle fire, and formed into cakes, it is called *shell-lac*. United with ivory-black, or vermilion, it forms black and red *sealing-wax*. A solution with borax, coloured by lamp-black, constitutes *Indian ink*. Lac, dissolved in alcohol or other menstrua, by different methods of preparation, forms various kinds of *varnishes* and *lackers*. In the East it is much used for trinkets.

LAC'CIC, pertaining to lac, or produced from it; as, *laccic* acid.

LACE, a delicate kind of net-work, used as an ornament of dress, made of gilt and silver thread, silk, cotton, or of flax. The most celebrated and costly is made at Brussels. Much used to be made in Buckinghamshire, called pillow or bobbin lace, from being woven upon a pillow or cushion by means of bobbins; but the machine lace of England is now equal to any, and much cheaper. In speaking of the modern machine-made bobbin-net lace, Dr. Ure says, "this elegant texture possesses all the strength and regularity of the old Buckingham lace, and is far superior in these respects to the point net and warp lace, which had preceded, and in some measure paved the way for it. Bobbin-net may be said to surpass every other branch of human industry in the complex ingenuity of its machinery; one of Fisher's spotting frames being as much beyond the most curious chronometer in multiplicity of mechanical device, as that is beyond a common roasting-jack." A *rack* of lace, is a certain length of work counted perpendicularly, and contains 240 meshes or holes; and such has been the progress of improvement and economy in this manufacture, that the cost of labour in making a *rack*, which was, twenty years ago, 3*s.* 6*d.*, is now not more than one penny!——*Lace made by Caterpillars.* This most extraordinary and ingenious species of manufacture has been contrived by an officer of engineers residing in the city of

Munich. It consists of lace and veils, with open patterns in them, made entirely by caterpillars. The following is the mode of proceeding adopted:—Having made a paste of the leaves of the plant, on which the species of caterpillar he employs feeds, he spreads it thinly over a stone, or other flat substance, of the required size. He then, with a camel-hair pencil dipped in olive oil, draws the pattern he wishes the insects to leave open. This stone is then placed in an inclined position; and a considerable number of the caterpillars are placed at the bottom. A peculiar species is chosen, which spins a strong web, and the animals commence at the bottom, eating and spinning their way to the top, carefully avoiding every part touched by the oil, but devouring every other part of the paste. The extreme lightness of these veils, combined with some strength, is truly surprising. One of them measuring twenty-six and a half inches by seventeen inches, weighed only 1.51 grains—a degree of lightness which will appear more strongly by contrast with other fabrics. One square yard of the substance of which these veils are made, weighs four grains and one-third; whilst one square yard of silk gauze weighs one hundred and thirty-seven grains, and one square yard of the finest patent net weighs two hundred and sixty-two grains and a half.

LACERTA, in zoology, the lizard tribe, an extensive genus of *amphibia*, but far more numerous in former states of the earth than at the present.

LACH'RYMAL, an appellation given to several parts of the eye, from their serving to secrete or convey away the tears, as the *lachrymal ducts*, the *lachrymal gland*.

LACHRYM'ATORY, in antiquity, a vessel in which were collected the tears of a deceased person's friends, and preserved along with the ashes and urn. It was a small glass bottle or phial, many of which have been found in the tombs and sepulchres of the ancients.

LA'CING, among mariners, the rope or line used to confine the heads of sails to their yards.

LACIN'IATED, in botany, an epithet denoting a leaf which has several sinuses down to the middle, and the lobes which separate these indented or jagged.

LACK, in commerce, the number of 100,000 rupees in India; about 12,500*l.* sterling.

LAC'QUER, or LACK'ER, a sort of varnish applied to tin, brass, or other metals. The basis of lacquer is a solution of the resinous substance of seed-lac, or *shell-lac*, in spirits of wine. In order to give a golden colour to the solution, two parts of gamboge are added to one of annotto. When silver leaf or tin is to be lacquered, a larger quantity of the colouring materials is requisite than when the lacquer is intended to be laid on brass.

LACTE'A FE'BRIS, in medicine, the milk fever.

LAC'TEALS, or LAC'TEAL VESSELS, in anatomy, tender transparent vessels, possessed of an infinite number of valves, which convey the chyle from the mesentery to the thoracic duct.

LAC'TIC A''CID, in chemistry, an acid procured from sour milk by precipitating it with lime-water and separating the lime with oxalic acid. It is supposed to consist of acetic acid and muriate of potash, with a small portion of iron and an animal matter. Lactic acid may be detected in all the fluids of the animal body, either free or saturated with alkaline matter.

LACTIF'EROUS, in botany, an appellation given to plants abounding with a milky juice, as the sow-thistle, and the like.

LACTU'CA, in botany, the name of a genus of plants, class *Syngenesia*, order *Polygamia æqualis*. The *Lactuca sativa*, or common lettuce, a cooling salad herb, possessed of narcotic properties, but affording no nutriment. Lettuce formed the opium of Galen in his old age; a proof that, in the warmer climates, it must have a higher degree of narcotic power than it acquires in this country.——*Lactuca virosa*, or strong-scented lettuce, is a common plant in our hedges and ditches, which has a strong ungrateful smell, resembling that of opium, and a bitterish acrid taste. It abounds with a milky juice, resembling that of the white poppy.

LA'DING, a term applied to the goods in a ship, whose quantity is limited by her own tonnage, when the specific gravity of the goods is greater than water.

LA'DY. This word originally appertained only as a title to the daughters of earls; but now, by custom, it belongs to any woman of genteel manners and education.

LA'DY-BIRD, or LA'DY-COW, in entomology, a small red sheath-winged insect, of the genus *Coccinella*. They deposit their eggs on the leaves of trees, and the larvæ produced are great devourers of the aphides or plant-lice.

LA'DY-DAY, the 25th of March, so called because it is the day of the Annunciation of the Virgin Mary.

LADY'S-SLIP'PER, in botany, a plant of the genus *Cypripedium*, conspicuous for its large inflated flowers. They are chiefly found in the mountainous parts of Europe and in North America.

LAGOON', a name given to those creeks, or shallow lakes, which extend along the coast, and which contain numerous small islands: Venice, for instance, is built on sixty of them. Towards the sea the islets are secured by dams, natural or artificial.

LAGOPHTHAL'MIA, in medicine, a disease in which the eye cannot be shut. It may arise from various causes, but the most frequent is a cicatrix, after a wound, ulcer, or burn.

LAIR, among sportsmen, the place where the deer harbour by day. This term is also used to signify a place where cattle usually rest under shelter; also the bed or couch of a wild beast.

LAIRD, a title of honour in the Highlands, equivalent to that of *Lord*.

IT IS GENERALLY BELIEVED THAT THE LACE MANUFACTURE WAS INTRODUCED INTO ENGLAND BY SOME REFUGEES FROM FLANDERS.

LACTIC ACID HAS NOT HITHERTO BEEN APPLIED TO ANY USE IN THE ARTS, EXCEPT BY THE DUTCH, IN BLEACHING THEIR LINEN WITH SOUR MILK.

CARMINE, THE FINE RED LAKE COLOUR, IS PREPARED BY PRECIPITATION FROM A DECOCTION OF COCHINEAL, WITH OTHER INGREDIENTS.

LAKE, a large collection of inland water, having no direct communication with the ocean. Lakes may be divided into four kinds: 1, such as neither receive nor send forth rivers; 2, such as emit rivers, without receiving any; 3, such as receive rivers, without emitting any; and 4, such as both receive and send forth rivers. The largest on the old continent is the Caspian, 700 miles long, and 200 broad, often called a *sea;* and in North America, a series of magnificent lakes run into each other, the largest of which, Lake Superior, is 540 miles long, and 150 broad. All the great American lakes are of fresh water.——*Lake*, in painting, a fine red colour, between carmine and vermilion. It is formed by precipitation from the solution of the colouring matter with an earth or metallic oxyde.

LA'MA, a pretended delegate of heaven, or pontiff of Tartary and Thibet. He is worshipped as a supernatural being by his subjects, and is never to be seen but in the secret recesses of his palace, where he sits cross-legged on a cushion. The people believe that the supreme divinity lives in him, that he knows and sees every thing in the deepest recesses of the heart, and that he never dies, but on the dissolution of his mortal frame his soul enters into the body of a new-born child. The worship of his followers consists in clamorous songs and prayers, in splendid processions, in the solemnization of certain festivals, and in personal austerities.

LAM'BDOCISM, a fault in speaking, where too much stress is laid on the pronunciation of the letter *l*.

LAMBDOI'DAL, in anatomy, an epithet for a suture of the occiput.

LAMEL'LÆ, in conchology, the little plates of which the shells of crustaceous fish are composed.

LAMENTA'TIONS, a canonical book of the Old Testament, written by the prophet Jeremiah. The first four chapters of the Lamentations are an *abecedary*, every verse or couplet beginning with one of the letters of the Hebrew alphabet, in the alphabetical order.

LAM'INA, a layer or coat lying over another; applied to the plates of minerals, bones, &c.——In botany, the broad or spreading part of the petal, in a polypetalous corolla.——In mineralogy, a plate or thin piece of metal.——In anatomy, *laminæ* are the two plates or tables of the skull.

LAM'INABLE, an epithet for a metal which may be extended by passing between steel or hardened cast-iron rollers.

LAM'MAS-DAY, a festival celebrated on the first of August by the Romish church, in memory of St. Peter's imprisonment.

LAMP'AS, or LAM'PERS, a disease in the palate of a horse's mouth.

LAMP'BLACK, a colour procured from the soot of a lamp; or rather, a fine soot formed by the condensation of the smoke of burning pitch, or some resinous substance, in a chimney terminating in a cone of cloth.

LAM'PIATE, in chemistry, a compound salt, composed of lampic acid and a base. The *lampic acid* is obtained by the combustion of ether by means of a lamp.

LAM'PREY, a genus of anguilliform fishes, which adhere firmly to rocks and other bodies by the mouth. They are esteemed as a delicacy, and are in season in the months of March, April, and May. They resemble the eel, both in their form and winding movements.

LAM'PYRIS, a genus, containing 60 species of fire-flies. [See FIRE-FLY, GLOW-WORM, &c.] One of this genus (called the Skipper, from the singular dexterity with which, when lying on its back, it throws itself into the air, and falls on its feet), emits its light from two transparent tubercles attached to its thorax, besides which there are two luminous spots beneath the elytra, only visible, of course, when it is on wing, and they are elevated: it then appears studded with four rich and vivid gems of a golden, blue lustre. In fact, the whole body seems a flood of pure light. In the West Indies (says Mr. John Murray, in his entomological remarks), the natives employ these living fires to give light in managing their household concerns. In travelling, they are wont to attach one to each toe; and it is stated that in fishing and hunting they require no other illumination.

LA'NATE, in botany, covered with a substance like curled hairs; as a *lanated* leaf or stem.

LAN'CEOLATE, in botany, oblong and gradually tapering towards each extremity; as, a *lanceolate* leaf.

LA'NCERS, in military affairs, a body of men (originally in Poland, but now common in other countries also) armed with long lances, and mounted on swift horses.

LA'NCET, a two-edged surgical instrument, used in bleeding, opening tumours, &c.

LAND, in geography, one main division of the earth—the solid matter which constitutes the fixed part of the surface of the globe, as distinguished from water. Hence we say, the earth is *terraqueous*, consisting of land and water.——*Land*, in seaman's language, makes part of several compound terms: thus, *to make the land*, is to discover land from sea, as the ship approaches it. *Land-locked*, is when land lies all round the ship, so that no point is open to the sea: if it anchor in such a place, she is said to ride land-locked, and is considered safe from wind and tide. A *land-mark*, is any mountain, rock, steeple, tree, &c. that may serve to make the land known at sea, and thereby direct ships passing by how to steer, so as to avoid rocks, shoals, whirlpools, &c. The *land is shut in*, a term used to signify that another point of land hinders the sight of that the ship came from. The ship lies *land to*, that is, she is so far from shore that it can only be just discerned. *Land-turn*, is a wind that in almost all hot countries blows at certain times, from the shore in the night. *To set the land*, is to see by the compass how it bears from the ship. *Land-breeze*, a current of air which, in many parts

ALLOTMENTS OF LAND LET AT FAIR RENTS TO THE POOR, PROMOTE INDUSTRY AND SOBRIETY, AND ARE THE MEANS OF INCREASING SUBSISTENCE.

within the tropics, particularly in the West Indies, regularly sets from the land towards the sea during the night, and this even on opposite points of the coast.

LANDAU', a coach which parts at the top, so as to form an open carriage.

LAND'GRAVE, in Germany, the title of certain princes who possess estates or territories called *landgraviates*. It was formerly an officer who had jurisdiction over such a tract of country or province.

LAND'ING, in architecture, the first part of a floor at the head of a flight of stairs.

LAND REMAINS, a term applied to remains of animals and vegetables, found everywhere on digging in the earth, mostly interchanged with strata of marine remains.

LAND'SCAPE, in painting, a particular extent of land, with all the objects it contains and its various scenery.

LAND'SLIP, the sliding down of a considerable tract of land from a mountain.

LAND-WAITER, an officer of the Custom-house, whose duty it is upon landing any merchandize, to examine and take an account of the various articles.

LAN'GREL SHOT, or LAN'GRAGE, a particular kind of shot used at sea for disabling the sails and rigging of an enemy's ship. It consists of bolts, nails, and other pieces of iron fastened together.

LAN'GUAGE, an assemblage of articulate sounds forming words and signs for the expression of the thoughts of the mind; a faculty by which the all-wise Creator has distinguished man from the inferior animals. That there was a primitive language, which was spoken by our first parents, is a fact derived from Holy Writ; but what that language was, is involved in the deepest obscurity. Man was created a social animal; it was therefore necessary that men should be able to communicate to each other their plans, projects, and ideas. By means of their mental faculties and physical organs, they soon found words by which to make known their perceptions of natural and moral objects; and they also found means to retain them in their memory by some method or order of classification. Whatever theories may be started, we really know no more than this: let us then be content with what we know, nor uselessly spend our time in seeking to discover that which is hidden under an impenetrable veil. When we speak of *written language*, as distinguished from *oral*, it is understood, that certain marks or characters are, by tacit agreement, considered the representatives of audible sounds; in short, that these visible signs are made to awaken in the mind the idea of certain sounds, which sounds, by another tacit agreement, awaken the ideas of physical objects or moral perceptions. Thus the eye operates on the mind through the medium of the ear; but the process is so rapid, that it is not perceived at the time; and writing may therefore be said even to be a quicker mode of communication than speech, for the eye can run over, and the mind comprehend, the sense of a page of a printed book, in a much shorter space of time than the words which it contains can be articulated. But speech is the basis of all other modes of communication between men; and all of them, whatever be their forms, reach the mind only through the recollection of ideas, as clothed in the words of a spoken language.

LAN'GUED, in heraldry, an epithet for the tongue of an animal, represented in coat armour of a different tincture from the body.

LAN'IARD, a short piece of rope or line, fastened to several machines in a ship, and serving to secure them in a particular place, or to manage them more conveniently; but more especially those used to extend the shrouds and stays of the masts.

LANI''GEROUS, an appellation given to whatever bears wool. Lanigerous trees are such as bear a woolly or downy substance, as in the catkins of the willows, &c.

LA'NIUS, in ornithology, a genus of birds, order *Accipitres*, having a straight bill, with a tooth on each mandible at the end, and a tongue jagged at each end. The principal species are the Great Shrike *(lanius excubitor)*, and the Butcher-bird *(lanius colluris)*.

LAN'TERN, or LANT'HORN, a case or vessel to carry a candle in; being a kind of cover usually made of white iron, with sashes of some transparent matter, as glass, horn, &c. to transmit the light.——*Dark Lantern*, one with only a single opening, which may also be closed up when the light is to be entirely hid; or opened, when there is occasion for the assistance of the light to discover some object.——*New Ships' Signal Lantern*. A most admirable invention has lately been brought into use, and is likely (says the Hull Packet) to meet with general adoption, intended to prevent those accidents which are the cause of so much loss of property, as well as the annual sacrifice of a number of valuable lives. It consists of a ship's lantern, of copper, strongly and efficiently constructed, and possessing the means of being regulated so as to show a light of different colour, according to the tack upon which the vessel bearing it may be sailing, or the position in which she lies. A set of instructions accompanies each lantern, by which the master is informed what light he is to show on each change of tack and position, and thus a mutual understanding is attained amongst navigators as to the meaning of the signals exhibited. The change of colours is effected by the following simple contrivance:—The lantern contains an interior case, capable of being turned round, and having windows of glass of several colours. The lamp of the lantern has a strong reflector and powerful bull's eye, or magnifier, to project the light, opposite which, in the outer case, is an aperture. By turning round the interior case, each coloured glass window is brought in front of the bull's eye, and thus a light of the colour required is projected.——*Lantern*, in architecture, a little dome raised over the roof of a building to give light, and to serve as a crowning to the fabric.

LAN'TERN-FLY, a beautiful insect of South America, of the genus *Fulgora*, emitting a strong phosphoric light from its head or lantern, and almost literally filling the air in an evening.

LAOC'OON, a celebrated monument of Greek sculpture executed in marble by Polydorus, Athenodorus, and Agesander, the three most celebrated artists at Rhodes. This fine remain of antiquity was found at Rome in the palace of Titus, in the beginning of the 16th century, and has since been deposited in the Farnese palace. Laocoon, who was a priest of Neptune, is represented, with his two sons, enveloped in the folds of two monstrous serpents; and the whole displays the most thorough knowledge of anatomy, of character, and of ideal perfection. Casts of this beautiful group are to be met with at any of the statuary shops.

LAP'IDARY, one who polishes and engraves stones. This is effected by means of friction produced by wheels of various metal, according to the nature of the stone to be worked. Thus diamonds require wheels of soft steel; rubies, sapphires, and topazes, copper wheels; emeralds, amethysts, &c. leaden wheels—worked with oil and various powders.——The term *lapidary* is also used for a virtuoso skilled in the nature, kinds, &c. of precious stones, or a merchant who deals in them.——*Lapidary-style*, denotes that which is proper for monumental or other inscriptions.

LAPIDES'CENT, a term for whatever has the quality of petrifying or turning to stone. The waters of many springs are impregnated with *lapidescent* particles of spar, and bodies immersed in them being crusted over, are said to be petrified.——The operation of forming or converting into a stony substance, by means of a liquid which crystalizes in the interstices, is called *lapidification*.

LA'PIS (*Latin*), stone of any kind; but the term *lapis* is applied by physicians, chemists, &c., to several other substances, as well as to different kinds of stone; as *Lapis Bononinensis*, the Bolognian stone; *Lapis hepaticus*, liver stone, &c.

LA'PIS HIBER'NICUS, a kind of slate, or very hard stone, found in different parts of Ireland, in a mass of a bluish black colour. In the fire it yields a sulphureous gas, and acquires a pale red colour, with additional hardness.

LA'PIS LA'ZULI, in painting, a stone of an azure or blue colour, of which the paint called *ultramarine* is made. It is a combination of silex, the blue fluate of lime and sulphate of lime, and iron; is very compact and hard, and is found in lumps of a beautiful blue colour, richly variegated with clouds of white, and veins of shining gold colour.

LA'PIS MARMO'REUS, in archæology, a marble stone in Westminster Hall, in the midst of which stood a chair wherein our kings anciently sat at their coronation. The courts of Chancery and King's Bench were erected over this stone.

LAPSE, in ecclesiastical law, an omission on the part of the patron to present to a benefice within six months after it is vacant, upon which default the ordinary has a right to collate to the said benefice.——*Lapsed Legacy*, one which falls or is lost by a lapse; as where the legatee dies before the testator, or where a legacy is given upon a future contingency, and the legatee dies before the contingency happens.

LAP'WING, in ornithology, the *Tringa vanellas* of Linnæus, a bird about the size of a pigeon, belonging to the snipe and plover tribe. It is found in Europe in large flocks, except during the pairing season, when it separates for the purposes of incubation.

LAR'BOARD, a sea term for the left hand side of a ship, when looking towards the stem or head; opposed to *starboard*.

LAR'CENY, in law, the felonious and fraudulent taking away the goods or property of another. Larceny was formerly divided in England into *grand* and *petty*; the former being the stealing of an article over the value of one shilling, and the latter not over that sum; but this distinction was abolished by a statute of 7 and 8 George IV.

LARCH, in botany, the *Pinus larix* of Linnæus, a lofty tree of the pine kind, bearing leaves like those of the pine. The gum of this tree is called *Venice turpentine*. The leaves fall off in winter. The timber, which is remarkably durable, is much used in naval architecture, for masts and the framework of vessels, being capable of sustaining much greater pressure even than oak. The American larch, a native of Canada and some parts of the United States, is a noble tree, with a straight trunk, often rising to the height of 100 feet, and giving out numerous slender branches. The celebrated cedar of Lebanon, the largest and most majestic of the *coniferæ* of the Eastern continent, is a species of larch.

LA'RES, in antiquity, the domestic or household gods among the Romans, which the family honoured as their protectors. They were images of wood, stone, or metal, and generally stood upon the hearth in a kind of shrine.

LAR'GO, and LARGHET'TO *(Italian)*, musical terms, directing to slow movement. *Largo* is one degree quicker than *grave*, and two degrees quicker than *adagio*.

LARK, in ornithology, a bird of the genus *Alauda*, distinguished for its singing. The *sky-lark*, which is the most harmonious of this musical family, commences his song early in the spring, and continues it during the whole summer, and is one of those few birds that chant whilst on the wing. When it first rises from the earth, its notes are feeble and interrupted; as it ascends, however, they gradually swell to their full tone, and long after it is lost to the sight it still continues to charm the ear with its melody. It mounts almost perpendicularly, but descends in an oblique direction, unless threatened with danger, when it drops like a stone.——The *wood-lark* is distinguished by its smaller size and less distinct colours. It is generally found near the bor-

ORIENTAL RUBIES, SAPPHIRES, AND TOPAZES, ARE CUT WITH DIAMOND POWDER SOAKED WITH OLIVE OIL, ON A COPPER WHEEL.

THE STORY OF LAOCOON HAS FREQUENTLY FURNISHED A SUBJECT TO THE POETS; AND IT MUST EVER BE A FAVOURITE STUDY FOR TYROS IN ART.

ders of woods, perches on trees, and sings during the night, so as to be sometimes mistaken for the nightingale.——There are two or three other varieties of this genus, but they are very inferior as songsters to the before-mentioned.

LARK'SPUR, in botany, a plant of the genus *Delphinium* (allied to the ranunculus and columbine), of which there are numerous species. Many of them are common in our gardens, where they are cultivated for the beauty and brilliant colours of their flowers.

LA'RUS, in ornithology, the gull, a genus of birds, order *Anseres*. Birds of this tribe inhabit the coasts of northern countries, feed on fish and carrion, are very voracious, and when frightened discharge the contents of the maw.

LAR'VA, in entomology, the grub or caterpillar state of an insect; or first stage in the metamorphoses of insects, preceding the chrysalis.

LARYNGOT'OMY, in surgery, the operation of cutting the larynx or windpipe, for assisting obstructed respiration, or removing foreign bodies.

LA'RYNX, an organ of the voice, being a cartilaginous cavity connected with the windpipe, and on the size and flexibility of which depend the powers and tones of the human voice. The superior opening of the larynx is called the *glottis*.

LASCAR', in the East Indies, a native seaman, or a gunner.

LAS'SITUDE, among physicians, a morbid sensation or languor, which often precedes disease.

LAST, a measure or weight, as a last of corn, &c. equal to ten quarters, and a last of cod fish, &c. equal to from twelve to twenty-four barrels.

LATEEN' SAILS, triangular sails frequently used by xebecs, polacres, settees, and other vessels navigated in the Mediterranean.

LA'TENT HEAT, is heat in combination, in distinction from *sensible* heat; the portion of heat which disappears when a body changes its form from the solid to the fluid, or from the fluid to the aeriform state.

LAT'ERAL EQUA'TION, in algebra, a simple equation, whose root is only in one dimension.

LAT'ERAN COUNCILS, those councils held in the basilica of the Latin church at Rome.

LATERIFO'LIOUS, in botany, an epithet for a flower growing on the side of a leaf at the base.

LATERI'TIOUS SED'IMENT, in medicine, a sediment in urine resembling brick-dust, observed after the crises of fevers, &c.

LATH, in carpentry, a long, thin piece of wood, nailed to the rafters of a wall or roof to receive the plaster or covering.

LATHE, an engine used in turning wood, ivory, and other materials. —— *Lathe*, as used in Kent and Sussex, is part of a county, containing three or four hundreds.

LAT'ICLAVE, in antiquity, an ornament of dress worn by Roman senators.

LAT'IN, the language spoken by the ancient Romans, or the inhabitants of Latium, from which it derives its name. The Latin tongue was for a while confined almost wholly within the walls of Rome; nor would the Romans allow the common use of it to their neighbours, or to the nations they subdued: but, by degrees they in time became sensible of the necessity of its being generally understood for the convenience of commerce; and accordingly used their endeavours that all the nations subject to their empire, should be united by one common language, so that at length they imposed the use of it by an express law.

LAT'ITAT, in law, a writ used in personal actions, where the party is to be arrested in any other county than Middlesex.

LAT'ITUDE, in geography, is the distance of any place from the equator, measured in degrees, minutes, and seconds, upon the meridian of that place; and is either north or south, according as the place is situated either on the north or south side of the equator.——In astronomy, it is the distance of a star north or south of the ecliptic.

LATITUDINA'RIAN, in theology, one who indulges a latitude of thinking and interpretation of the scriptures. —— In a general sense, it denotes one who is not restrained by precise settled limits in opinion, but is governed by a sense of moderation.

LA'TRIA, the highest kind of worship, or that paid to God: distinguished by the Catholics from *dulia*, or the inferior worship paid to saints.

LATRO'BITE, a mineral of a pale red colour, massive or crystalized, from an island near the Labrador coast.

LAT'TEN-BRASS, plates of milled brass reduced to different thicknesses, according to the uses they are intended for.

LAUD'ANUM, in medicine, a soporific tincture, containing the finer and purer parts of opium, drawn in water and spirits of wine and then reduced to its due consistence.

LAUNCE FISH, or SAND LAUNCE, in ichthyology, a fish which buries itself on the recess of the tide a foot deep in the sand. It is generally used for baits.

LAUNCH, a particular kind of flat boat used in underrunning the cables of different ships.

LAU'REATE. In England the *poet laureate* was formerly an officer of the royal household, whose business it was to compose a birth-day ode for the monarch, and another for the new year. These obligations have been dispensed with; and the honour of the laureateship, with the salary, is now given as the reward of high poetic genius.

LAUREA'TION, in the Scotch universities, signifies the act of taking the degree of master of arts, which the students are permitted to do after four years' study.

WHATEVER BE THE STRUCTURE OF A PLANT, THE OFFICE OF ABSORPTION IS CARRIED ON BY THE EXTREMITIES ALONE.

LAURENTA'LIA, in antiquity, a festival kept by the Romans on the 23rd of December, in memory of Acca Laurentia, the nurse of Romulus and Remus. She was called *Lupa* by way of nick-name; hence the story of the wolf that suckled the royal twins.

LAU'RUS CAM'PHORA, in botany, the systematic name of the camphor-tree.——*Laurus cinnamomum*, the systematic name of the cinnamon-tree. Cinnamon bark is one of the most grateful of the aromatics; of a fragrant smell, and of a moderately pungent taste, accompanied with considerable sweetness and some degree of astringency. It is one of the best cordial carminatives and restorative spices we possess.——*Laurus nobilis*, the sweet bay tree, a native of Italy, but cultivated in our gardens and shrubberies as a handsome evergreen. This is the *laurus* of honorary memory, the distinguished favourite of Apollo.——*Laurus sassafras*, the systematic name of the sassafras-tree. The wood is covered with a rough fungous bark, which has a fragrant smell, and a sweetish, aromatic, and subacrid taste. Its medicinal character was formerly held in great estimation, but it is now seldom used except in conjunction with other medicines, as a corrector of the fluids.

LA'VA the melted compound of minerals and stony matter that flows from burning volcanoes.

LAVAN'DULA, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*.——*Lavan'dula Spi'ca*, or Common Lavender, is a plant cultivated in our gardens on account of the fragrance of its flowers. The essential oil, obtained by distillation, is of a bright yellow colour, of a very pungent taste, and possesses, if carefully distilled, the fragrance of the lavender in perfection.

LAVATE'RA, in botany, a genus of plants, class 16 *Monadelphia*, order 6 *Polyandria*. The species are mostly perennials.

LAW, an established or permanent rule, prescribed by the supreme power of a state to its subjects, for regulating their social actions. Laws may be divided into the following classes: declaratory laws; directory laws; remedial laws; and prohibitory and penal laws. *Declaratory laws* only declare what the law shall be, not what it has been, or is. *Directory laws* are those which prescribe rules of conduct, or limit or enlarge rights, or point out modes of remedy. *Remedial laws* are those whose object it is to redress some private injury, or some public inconvenience. *Prohibitory and penal laws* are those which forbid certain things to be done or omitted, under a penalty, or vindicatory sanction. The legislation of no country, probably, ever gave origin to its whole body of laws. In the very formation of society, the principles of natural justice, and the obligations of good faith, must have been recognized before any common legislature was acknowledged. Debts were contracted, obligations created, personal property acquired, and lands cultivated, before any positive rules were fixed as to the rights of possession and enjoyment growing out of them. The first rudiments of jurisprudence resulted from general consent or acquiescence; and when legislation began to act upon it, it was rather to confirm, alter, or add to, than to supersede, the primitive principles adopted into it. The formation of codes, or systems of general law, for the government of a people, and adapted to their wants, takes place only in advanced stages of society, when knowledge is considerably diffused, and legislators have the means of ascertaining the best principles of policy and the best rules for justice, not by mere speculation and theory, but by the results of experience, and the reasoning of the learned and the wise.——We shall now proceed to give separate definitions of the word *law*, as it is variously applied.——*Municipal* or *civil law*, is a rule of civil conduct prescribed by the supreme power of a state, commanding what its subjects are to do, and prohibiting what they are to forbear.——The *law of nature*, otherwise called ethics, or morals, comprehends those rules of right and wrong, of which the sentiment is in every man's breast, and of the justice of which reflection affords sufficient conviction.——The *divine law* is that which, not being naturally felt, nor discovered by reflection, is found only in inspired writings.——The *law of nations* is that rule of conduct which nations are to observe toward each other. This is founded upon the law of nature; but either ascertained or modified by usage, or by mutual compacts.——The *written law*, those laws or rules of action prescribed or enacted by a sovereign or state, and promulgated and recorded in writing.——*Unwritten* or *common law*, a rule of action which derives its authority from long usage, or established custom, which has been immemorially received and recognized by judicial tribunals.——*Ecclesiastical* or *canon law*, a rule of action prescribed for the government of a church.——*Martial law*, the rules ordained for the government of an army or military force.——*Marine laws*, rules for the regulation of navigation, and the commercial intercourse of nations.——*Physical laws*, the invariable tendency or determination of any species of matter to a particular form with definite properties, and the determination of a body to certain motions, changes, and relations, which uniformly take place in the same circumstances.——The *Mosaic law*, the institutions of Moses, or the code of laws prescribed to the Jews, as recorded in the Old Testament. That part which relates to the mere external rites and ceremonies to be observed by them, as distinct from the moral precepts, is called the *ceremonial law*.

LAWN, a superior kind of linen cloth, very similar to open worked cambric. It was formerly made only in France and Flanders; but at present the lawn manufacture is brought to great perfection in Scotland and Ireland, where it bids fair to rival our foreign competitors.

PROPERTY, BY THE ENGLISH LAW, IS DIVIDED INTO REAL AND PERSONAL; LAND AND TITHES BEING REAL; MONEY AND EFFECTS, PERSONAL.

LAY, an epithet in ecclesiastical law for what belongs to the people, in distinction from those who are in orders.——*Layman*, one who follows secular employments.——*Lay Brothers*, and *Lay Sisters*, in the Romish church, are such as perform the secular and servile offices in a monastery or convent.——*Lay Fee*, lands held in fee of a lay lord, as distinguished from those lands which belong to the church.——*Lay Impropriation*, the impropriating or employing the revenues of the church to the use of a layman.——*Lay Corporation*, any corporation or body which consists of laymen, created for some temporal purpose, as charitable corporations, who are constituted for the perpetual distribution of the free alms of the founder.

LAY'ER, in horticulture, a young shoot or twig bent down and covered with mould for growth or propagation. This operation is performed by slitting the branches a little way, and laying them about half a foot under the mould; the ground being first made very light, and after they are laid, a little water being given them.——*Layer*, among fishermen, a channel or bed in a creek, where small oysters are thrown for breeding.

LAY FIGURE, among painters, a small statue either of wax or wood, whose joints are so formed, that it may be put into any attitude or posture. Its principal use is for adjusting the drapery or clothing.

LAZARET'TO, a public building, hospital, or pest-house, for the reception of those afflicted with contagious diseases.

LAZ'ULITE, a mineral of a slight indigo blue colour, generally granular or occurring in small pieces not exceeding the size of a hazel-nut. It is found in narrow veins, traversing clay-slate, with quartz, in Saltzburg.

LEAD, in mineralogy, *Plumbum*, a metal found in considerable quantity in many parts of the earth, but seldom, if at all, in the pure metallic state. Lead is of a bluish gray colour, and very brilliant when fresh cut, but soon tarnishes from exposure to the air. It is the softest and least elastic of all the metals; easily flattened under the hammer, and ductile in a very great degree, though much less so than gold. It may easily be cut with a knife, and stains the fingers bluish-gray when rubbed. It fuses at 612° Fahr. and renders other more refractory metals fusible, but requires the least degree of fire of all metals, except tin, to put it in fusion. It acquires this fluid state long before it changes its colour; whereas the other metals, except tin, all become red-hot before they run: after melting, it very readily calcines into a gray powder, which, if the fire be increased and the matter often stirred, becomes yellow, and afterwards of a fine florid red: this is the *minium*, or common *red lead* of the shops. If the fire be made yet more vehement, it runs into an oleaginous matter, which, as it cools, becomes of a yellowish or reddish colour, and is composed of a number of thin laminæ: this is litharge. Though these several substances have nothing of the appearance of the metal they are produced from, yet if a little iron-filings be added to them over the fire, or only some pieces of charcoal, or any other oily inflammable matter be thrown in, they become lead again. The greater part of the acids act upon it. Acetic acid dissolves it. When combined with mercury, it forms a crystalizable alloy which becomes fluid when triturated with bismuth. Lead, while in the earth, enters into the substance of crystal. This is frequently the case with that crystal which is found about lead-mines, the figure of which it renders a cube. It often does this without altering the colour; but when it tinges likewise, the tint it gives is yellow.——The topaz, among the gems, owes its yellow colour to this metal; and, in the factitious gems, the tint it gives to the composition is always a yellow approaching to that of the topaz.——Various preparations of lead are used medicinally; but when injudiciously administered, or taken accidentally into the body, they cause violent colics, paralyses, tremors, and contractions of the limbs; and as they generally come on gradually, the cause is often overlooked till it be too late. Poisoning from lead arises either from liquors becoming impregnated with lead, by being improperly kept in vessels, lined or glazed with lead, or to which lead has been criminally added, to correct its acidity; or among manufacturers who work much with lead, as plumbers, painters, &c. The presence of lead in any suspected liquor, is detected by the hydrosulphuret of potash, which forms with it a dark brown precipitate, not soluble in diluted muriatic acid; and still more certainly by evaporating a portion of the liquor to dryness, and exposing the extract to a heat sufficient to reduce the lead.

LEAF *(folium)*, in the natural history of plants, a very essential and ornamental part of them; for, by its numerous pores, the leaf absorbs the gases which are adapted for the nutrition of the plant, or exhales those which have become useless for that purpose. The variation of the leafing of trees, their peculiar properties and appearances, their exhilarating effects when bursting forth in spring, and the fall of "the sere and yellow leaf" at the approach of winter, furnish the mind with matter for continual reflection, in a moral point of view, as furnishing most striking emblems of the successive periods of human life.—Light and air, which so essentially influence the vegetable kingdom, act chiefly on the leaves; and they have not unaptly been compared to the animal organs of respiration. The leaf changes whatever passes through it into the plant from without: sound and green leaves, in the sun, exhale oxygen and absorb carbonic acid gas; but by night, or in the dark, they give out carbonic acid gas, and absorb oxygen from the air. The importance of leaves to plants is shown by the fact that no plant can grow, or form blossoms, or fruits, if deprived of leaves. They also form an im-

ABOUT 8,000,000*l.* ARE ANNUALLY EXPENDED IN ENGLAND FOR SHOES.

portant characteristic in the subdivision of plants, and are divided into simple and compound; the latter class consisting of those in which several leaves are supported on one footstalk.——The *lobe* of a leaf is the segment around the apex.——A *leaflet* is one of the divisions of a compound leaf. ——A *leaf-stalk* is the petiole or stalk which supports a leaf.

LEAGUE, in geography, a measure of length, containing a certain number of geographical paces, according to the usage or computation of different countries. A league at sea, where it is mostly used by us, is equal to three English miles, or 3000 geometrical paces: the league in France contains 3500 paces: the Dutch or German league, four geographical miles.——*League*, in politics, a treaty of alliance between different states or parties. It may be *offensive* or *defensive*, or both. It is *offensive*, when the contracting parties agree to unite in attacking a common enemy; *defensive*, when the parties agree to act in concert in defending each other against an enemy.

LEAK'AGE, in commerce, an allowance made to merchants for the leaking of casks, or the waste of liquors by leaking.

LEAP YEAR. [See BISSEXTILE.]

LEASE, in law, a demise of lands or tenements, or a conveyance of them, generally in consideration of rent or other annual recompense, for term of years, for life, or at will, provided it be for a shorter term than the lessor has in the premises. The party letting the lands, &c. is called the *lessor*, and the party to whom they are let, the *lessee*. Any one of the conditions of a lease not being complied with, the proprietor may resume possession.——*Lease and Release*, as used in our law, signifies a certain instrument in writing, for the conveyance of a right or interest in lands and tenements in fee to another.

LEASH, in sporting, the number three, as a *leash* of birds, a *leash* of greyhounds, &c. Also, a leather thong by which a falconer holds his hawk.

LEATH'ER, the skin of animals, prepared by the fellmonger, tanner, and dyer, and used for various purposes of clothing and furniture. The first takes off the hair, &c.; the second expels the unctuous parts, and substitutes oak bark and the tanning principle in the pores; and the latter furnishes and dresses it for use.

LEAV'EN, a piece of sour dough, used to ferment and render light a much larger quantity of dough or paste. During the seven days of the passover, no leaven was permitted to be in the houses of the Jews.

LEDG'ER, the principal book used in merchant's accounts, wherein every man's particular account is kept; the book into which a summary of the journal is carried. ——*Ledger-lines*, in music, those lines added to the usual stave of five lines, when more are wanted for notes ascending or descending.

LEE, a sea term for that part which the wind blows upon, or that is opposite to the wind, as the *lee shore*. Literally, a place defended from the wind.——*Under the lee of a ship*, on the side opposite to that on which the wind blows.——*Under the lee of the land*, near the shore which breaks the force of the wind.——*Lee-side*, the side of a vessel farthest from the point whence the wind blows.——*Lee-tide*, a tide running in the same direction that the wind blows.——*Lee-lurch*, a sudden and violent roll of a ship to leeward in a high sea.——*Leeward*, pertaining to the part towards which the wind blows.

LEECH (the *Hirudo* of naturalists), a well known insect that lives in the water, and is commonly used in bleeding. The two principal species are the medicinal leech, which is employed to draw blood where the lancet is less safe; and the horse-leech, which is larger, and applied to horses for the same purpose. The leech's mouth is armed with a sharp instrument which makes three wounds, through which it sucks blood, and is, therefore, very useful in topical inflammations. The leech has no intestinal canal, but retains the blood for a considerable time, appearing to thrive upon it. As it generally happens that leeches have to be applied in the absence of the medical practitioner, the following observations may be of service: Previous to their application the skin should be very carefully cleansed from any foulness, and moistened with a little milk, and if retained by a small wine-glass, or the bottom of a pill-box, they will generally in a little time fasten themselves to the skin. On their removal, the rejection of the blood they have drawn may be obtained by the application of salt externally; of which a few grains are quite sufficient for the purpose.

LEG'ACY, in law, a bequest or gift by will of any personal effects; the person bequeathing is called the *testator*, and he to whom it is bequeathed the *legatee*. There is also a *residuary legatee*, or one to whom, after the several devises or bequests made by will, the residue of the testator's estate and effects are given. If a legacy is bequeathed, and no certain time of payment mentioned, and the legatee is an infant, he will be entitled to interest for his legacy from the expiration of a year after the death of the testator, which time is allowed an executor to see whether there be any debts; but when the legatee is of full age, he has no interest but from the time of the demand of the legacy; and if the legacy given is payable at a certain day, it must be paid with interest from that day.

LEG'ATE, the pope's ambassador to foreign countries; either a cardinal or a bishop. The power of a legate is sometimes given without the title. It was one of the ecclesiastical privileges of England from the Norman conquest, that no foreign legate should be obtruded upon the English, unless the king should desire it upon some extraordinary emergency, as when a case was too difficult for the English prelates to determine.

LEGATION, a term denoting the body

THE METHOD OF MAKING LEAVEN, AS PRACTISED BY THE ANCIENTS, WAS TO LET SOME DOUGH STAND IN A WARM PLACE 36 HOURS.

OF ALL ASTRINGENT SUBSTANCES, CATECHU CONTAINS THE LARGEST PROPORTION OF TANNIN, SO INDISPENSABLE IN PRODUCING LEATHER.

OUR CONSUMPTION OF LEATHER AMOUNTS TO 12,500,000*l.* A YEAR.

of official persons attached to an embassy. Hence *secretary of legation.*

LEGATO *(Italian)*, in music, a word used in an opposite sense to *staccato*, and implying that the notes of a movement or passage to which it is affixed are to be performed in a close, smooth, and gliding manner.

LE'GEND, a book used in the ancient Roman churches, containing the lessons that were to be read. The word was afterwards used to denote a chronicle or register of the lives of saints. As these histories were often nothing more than pious fictions, the name of a *legend* was given to the incredulous fables which make pretensions to truth.——*Legend*, in Roman antiquity, signifies the motto engraved upon medals, which differs from the inscription properly so called. The *inscription* signifies words placed on the reverse of a medal in lieu of figures; but the legend is the word made use of round the head or other figure.

LE'GERDEMAIN, tricks which, from the dexterity of the performer, are made to deceive the observer, and are called *sleight of hand.*

LE'GION, in Roman antiquity, a body of soldiers in the Roman army, consisting of different numbers at different periods of time. In the time of Romulus the legion consisted of 3000 foot and 300 horse; though after the reception of the Sabines, it was augmented to 4000. In the war with Hannibal it was raised to 5000; after this it sunk to 4000 or 4500, which was the number in the time of Polybius. The number of legions kept in pay together, also differed according to times and occasions. Each legion was divided into ten cohorts, each cohort into ten companies, and each company into two centuries. The chief commander of the legion was called *Legatus* (lieutenant). The principal standard of a legion was a silver eagle; and the legions were named from their commanders (as the *Claudian legion*), or from the place where they were stationed, &c. The word *legion* was revived in the time of Napoleon, and has since been commonly applied to a body of troops of an indefinite number, and usually of different kinds; as the *English-German legion*, the *British legion* in Spain, &c.

LE'GION OF HONOUR, an order instituted by Napoleon, while consul (May 19, 1802), for military and civil merit. It consisted of different grades of merit, as grand crosses, crosses, commanders, officers, and legionaries; all of whom receive pensions with this mark of distinction.

LE'GISLATURE, the supreme power of a state. [See CONSTITUTION, COMMONS, PARLIAMENT, &c.]

LEGITIMACY, a word which, in a political sense, is variously defined, according to the bias of the party by whom it is used. But in its most commonly received acceptation, it denotes the lawfulness of the government, in an hereditary monarchy, where the supreme dignity and power pass by law from one regent to another, according to the right of primogeniture.——*Legitimate* means *according to law*; hence, children born in wedlock are called legitimate, and those born out of wedlock are styled illegitimate.

LEGU'MEN, in botany, a pericarp, or seed-vessel, termed a pod, as the seed-vessel of the pea, vetch, lupine, &c., which are called *leguminous* plants.

LEM'MA, in mathematics, a preliminary proposition which serves to prepare the way for the demonstration of some other proposition.

LEM'MING, in zoology, an animal belonging to the genus *Mus*; a kind of rat, in the north of Europe, which sometimes migrates from north to south in immense numbers.

LEM'NIAN EARTH, a kind of astringent medicinal earth from the isle of Lemnos, in the *Ægean* sea. It has the external appearance of a reddish clay, and is saponaceous.

LEM'ON, the fruit of a tree belonging to the genus *Citrus*, originally brought from the tropical parts of Asia, but now grown in the south of Europe and other warm climates. The shape of the fruit is oblong, but its internal structure does not differ from the orange. The juice is acid and cooling, and furnishes that agreeable beverage called *lemonade.*——The preparation called *salt of lemons*, &c. used to remove ink-stains from linen, is the native salt of sorrel, the super-oxalate of potash. The effect is produced by the oxalic acid dissolving with facility the oxyde of iron in the ink, on the combination of which with the tannin and gallic acid the colour depends; while, at the same time, it can be used without any risk of injury to the cloth, on which it has no effect.

LE'MUR, a genus of quadrupeds (the *Makis* of Cuvier) which resembles the monkey in the form of the feet, but are very different from that animal in its temper and habits.

LE'MURES, among the ancient Romans, specters or ghosts, believed to be the souls of the dead, which tormented men in the night. In order to lay them, a ceremony called *lemuria* was observed on the nights of the 9th, 11th, and 13th of May.

LEN'ITIVE ELECTUARY, in pharmacy, a preparation composed chiefly of senna and some aromatics, with the pulp of tamarinds. It is used as a mild laxative.

LENS, in optics, a piece of glass, or other transparent substance, which either collects the rays of light into a point, in their passage through it, or makes them diverge, according to the laws of refraction, and to magnify or diminish objects at a certain distance. [See OPTICS, CONCAVE, &c.]

LENT, a solemn time of fasting and abstinence in the Christian church, observed as a time of humiliation before Easter, the great festival of our Saviour's resurrection. It begins on Ash-Wednesday, and continues forty days.

LENTICULAR, a surgical instrument employed for removing the jagged particles

ORANGES CONTAIN MALIC ACID, BUT THE LEMON A LARGE QUANTITY OF CITRIC ACID; HENCE THE LEMON IS SO SHARP AND PUNGENT.

THE NEGROES TAKE LEOPARDS IN PITFALLS, SLIGHTLY COVERED OVER WITH HURDLES, ON WHICH A PIECE OF MEAT IS PLACED AS A BAIT.

of bone from the edge of the perforation made in the cranium with the trephine.

LENTIC'ULITE, a petrified shell.

LENTI'GO, in medicine, a freckly eruption on the skin.

LEN'TIL, in botany, a plant of the genus *Ervum*. The seeds, which are contained in a pod, are round, flat, and rather convex in the middle. It is cultivated for its seeds, which afford a nutritious food, and also as fodder for cattle.

LENTIS'CUS, in botany, the *Mastich*, a tree of the genus *Pistacia*, the wood of which is resinous, fragrant, and of a pale brown colour. It is a native of Asia and the south of Europe.

LEN'TOR, in medicine, the viscid coagulated part of the blood, which, in malignant fevers, obstructs the capillary vessels.

LEN'ZINITE, in mineralogy, a variety of clay, occurring usually in small masses of the size of a nut. There are two kinds, the opaline and argillaceous.

LE'O, the *Lion*, in astronomy, one of the twelve signs of the zodiac, the fifth in order.

LEO'NINE VERSE, a kind of Latin verse, consisting of hexameters and pentameters, of which the final and middle syllables rhyme. Some say it derived its name from pope Leo I. (A.D. 680); others from Leonius, a poet of the 12th century.

LEOP'ARD, in zoology, a rapacious animal of the genus *Felis*, four or five feet long, of a yellow colour, and elegantly spotted, so as to render its skin an ornament of luxury. It is chiefly found in Senegal; its habits are those of the tiger, but it is seldom dangerous to man. From the extraordinary flexibility of the limbs of this animal, he is enabled to ascend trees, in which he usually takes refuge when pursued. In India there is a smaller species tamed for hunting.

LEP'IDOLITE, a mineral of a lilac or peach-blossom colour, found both massive and in small concretions. It is sometimes called *lilalite*.

LEPIDOP'TERA, in entomology, the third order of insects in the Linnæan system, which have their wings imbricated with fine scales, like powder, as the butterfly, moth, &c.

LEP'ROSY, a foul, cutaneous disease, appearing in dry, white, thin, scurfy scales, either on the whole body or some part of it. The leprosy is of various kinds; that which the Jews were particularly subject to is called elephantiasis, or black leprosy: hence the Jewish law excluded lepers from communion with mankind, banishing them into the country or uninhabited places, without excepting even kings.

LE'PUS, the HARE, [which see.]——*Lepus*, in astronomy, a constellation of the southern hemisphere.

LETH'ARGY, a heavy and constant sleep; a disease arising from cold, phlegmatic humours which oppress the brain, and cause an incessant drowsiness. It is considered as an imperfect apoplexy, and is mostly symptomatic.

LE'THE, in the ancient mythology, one of the rivers of hell, signifying oblivion or forgetfulness; its waters having, according to poetical fiction, the peculiar quality of making those who drank of them entirely forget every thing that was past.

LET'TER, a mark or character, written, printed, or engraved; used as the representative of a sound, or of an articulation of the human organs of speech. As sounds are audible, and communicate ideas to others by the ear, so letters are visible representatives of sounds, and communicate the thoughts of others by means of the eye.——A *letter* is also the medium of epistolary correspondence.——*Letter of credit*, among merchants, is a letter written by a merchant or banker to his correspondent abroad, requesting him to credit the bearer as far as a certain sum.——*Letter of attorney*, in law, a document or writing whereby a person constitutes another to do a lawful act in his stead, as to receive debts, &c.——*Letter of licence*, an instrument or writing granted by a person's creditors, allowing him a certain time for the payment of his debts; by which means he is enabled to prosecute his business without legal molestation.——*Letter of marque*, an extraordinary commission granted to commanders of merchant-ships, or others in time of war, to make reprisals on the enemy. The ship so commissioned is also called a *letter of marque*.——*Letter missive*, a letter sent out of Chancery in a process of law against a peer.——*Letters-patent*, are writings sealed with the great seal of England; so called, because they are open with the seal affixed to them. These are granted to authorise a man to do some act, or enjoy some right.

LEV'EL, in mechanics, an instrument to draw a line parallel to the horizon, by means of which the true level, or the difference of ascent or descent between several places, may be found. The instruments for this purpose are various; as the air-level, the carpenter's level, the mason's level, the gunner's level, mercurial levels, surveying and spiral levels, &c.; but their varieties are too numerous for us to insert a description of them here.——The art of *levelling* is particularly applied to the laying out grounds even, regulating descents, draining morasses, conducting water, &c.; and, in fortification, the reducing an uneven surface to that of a plane, so that the works may be of a corresponding height and figure.

LEU'CINE, in chemistry, a peculiar white pulverulent substance obtained from the fibres of beef, treated with sulphuric acid, and afterwards with alcohol.

LEU'CITE, in mineralogy, a white stony substance found among volcanic productions in Italy, in crystals or irregular masses; formerly called crystals of white shorl, or granilite.

LEUCOPHLEGMAT'IC, in medicine, an epithet for a dropsical habit of body with a white bloated skin.

LEUCOTHIOP, an Albino, or a white man of a black race.

LEU'THRITE, in mineralogy, a grayish

"I AM OF OPINION," SAYS SIR R. STEELE, "THAT WRITING HAS LOST MORE MISTRESSES THAN ANY ONE MISTAKE IN THE LEGEND OF LOVE."

white substance that appears to be a recomposed rock, of a loose texture, gritty and harsh to the touch.

LEVANT', a name given to the countries of Turkey, Syria, Asia Minor, Greece, Egypt, &c.; which are washed by the Mediterranean and its contiguous waters.

LEVA'TORS, in anatomy, an appellation given to several muscles, whose office is to lift up the part to which they are respectively attached. Thus the *levator anguli oris*, situated above the mouth, draws the corner of the mouth upwards, and makes that part of the cheek opposite to the chin prominent, as in smiling. And the *levator palpæbræ superioris*, the muscle that opens the eye, by lifting the upper eyelid.

LEV'ANTINE, an epithet for things pertaining to the Levant. Also, a particular kind of silk cloth.

LEVA'RI FA'CIAS, in law, a writ directed to the sheriff for levying a sum of money upon lands on a person who has forfeited his recognizance.

LEV'ÉE, in court phraseology, a ceremonial visit of the nobility, gentry, &c. who assemble to pay their respects to the queen (or king). It consists of gentlemen only, by which it is distinguished from what is termed a *drawing-room*, where ladies as well as gentlemen attend.

LEV'ÉE-EN-MASSE, a military expression for the patriotic rising of a whole people, including all capable of bearing arms, who are not otherwise engaged in the regular service; and is the most formidable obstacle, an enemy can encounter. In Germany it is called the *landsturm*, in distinction from the *landwehr*, or militia. In 1813 the governments of Northern Germany called it forth in every part of the country.

LE'VER, one of the mechanical powers, consisting of an inflexible right line, rod or beam, supported on a fulcrum or top, and used for the raising of weights, having itself such a weight as may be commodiously counterbalanced. Its arms are equal, as in the *balance;* or unequal, as in *steelyards*. Of all machines it is the most simple.

LEVI'ATHAN, a word which, in the Hebrew, signifies a great fish. Some suppose, from the description of it in the book of Job, it means a whale, while others have presumed it is a crocodile. In Isaiah, however, it is called the crooked serpent.

LEVIGA'TION, the mechanical operation or process of grinding the parts of bodies to a fine paste, by rubbing the flat face of a stone called a muller upon another stone called the table or slab.

LE'VITES, a term applied in Scripture to such of the tribe of Levi as were employed in the lower offices and ministries of the temple. In this particular, they were distinguished from the priests, who, being descended from Aaron, were likewise of the tribe of Levi. The Levites bore some resemblance in the tabernacle, and temple of the Jews, to the deacons among Christians. They were employed in bringing wood, water, and other necessaries for the sacrifice, and they sung and played upon instruments in the temple. They also applied themselves to the study of the law, and were the ordinary judges of the country, though always subordinate to the priests. Their subsistence was the tithes of corn, fruit and cattle throughout Israel; but the priests were entitled to a tenth of their tithes, by way of first fruits to the Lord.

LEVIT'ICUS, a canonical book of the Old Testament, so called from its containing the laws and regulations relating to the priests, Levites, and sacrifices. These duties, rites, and ceremonies, formed what is termed the *Levitical law.*

LEV'ITY, in physiology, the privation or want of weight in a body, when compared with another that is heavier; in which sense it stands opposed to *gravity.*

LEXICOL'OGY, that branch of literature which treats of the proper signification and just application of words.

LEX'ICON, a book containing an alphabetical arrangement of the words of a language, with an explanation of the meaning of each word.

LEY, or LEES, in chemistry, a term applied to any alkaline solution made by levigating ashes that contain an alkali.——*Lees of wine* are the refuse or sediment of wine standing quiet.

LEY'DEN JAR, in electrical experiments, a glass jar, having the outside and the inside coated with tin foil, and a brass wire, the upper part of which terminates in a ball of the same metal, and the lower part in a chain that communicates with the inside. This jar admits of being charged so as to produce the electrical shock and various other experiments illustrative of the power of electricity.

LHER'ZOLITE, in mineralogy, a variety of pyroxene, of an emerald green colour, brilliant when crystalized, and translucent.

LI'AS, in geology, a peculiar formation or species of limestone, occurring in flat, horizontal strata. It consists of thick, argillaceous deposits, which constitute the base on which the oolitic series reposes. The lias clay often occurs in the form of soft slate or shale, which divides into very thin *laminæ*, and is frequently much impregnated with bitumen and iron pyrites. It also contains a considerable quantity of common salt, and sulphate of magnesia and soda; in consequence of which, springs of water rising through it contain these salts in solution, as Cheltenham. Lias is remarkable for the number and variety of its organic remains, many of which are very curious.

LIBATION, among the Greeks and Romans, was an essential part of solemn sacrifices. It was also performed alone, as a drink offering, by way of procuring the protection and favour of the gods, in the ordinary affairs of life. At sacrifices, after the libation had been tasted by the priest, and handed to the by-standers, it was poured upon the victim. At entertainments, a little wine was generally poured out of the cup, before the liquor began to circulate, to

THE ARGILLACEOUS LIME-STONE, CALLED "LIAS," IS, FROM ITS FINE-GRAINED TEXTURE, PREFERABLE TO ALL OTHER STONES FOR LITHOGRAPHY.

A PERSON MAY BE PROSECUTED BY INDICTMENT FOR WRITING AN ABUSIVE LETTER TO ANOTHER, BUT IT IS NOT ACTIONABLE AS A LIBEL.

show their gratitude to the gods for the blessings they enjoyed. The libations to the dead were not performed till the ninth day after the burning or interment; and consisted of milk, wine, or blood, and generally concluded the funeral solemnities.

LI'BEL, in law, the malicious defamation of any person, either written or printed, in order to provoke him to anger, or to expose him to public hatred, contempt, or ridicule. Any book, pamphlet, writing, or picture, containing such representations, although only communicated to a single person, is considered in law a publication of it; and libellers may be brought to punishment by a prosecution, or be compelled to make reparation by a civil action. The civil action is grounded upon the injury which the libel is supposed to occasion to the individual; the public prosecution upon its tendency to provoke a breach of the peace. It is immaterial with respect to the essence of a libel, whether the matter of it is true or false, since the provocation, and not the falsity, is the thing to be punished *criminally;* though, without doubt, the truth of a libel will in many cases entitle the defendant to the merciful consideration of the court, when it decides upon the degree of punishment to be awarded. But in a *civil* action, a libel must appear to be false as well as scandalous. In a civil action, the plaintiff recovers damages, the amount of which is settled by the jury: but, upon an indictment, the jury has merely to acquit the defendant, or to find him guilty, after which the court passes judgment.——*Libel*, in the ecclesiastical and admiralty courts, is the name given to the formal written statement of the complainant's ground of complaint against the defendant.

LIBELLU'LA, or *Dragon-fly*, in entomology, a genus of insects of the order *Neuroptera*, of which there are sixty species. The whole tribe of the libellula are remarkable for being very ravenous: they are usually found hovering over stagnant waters, and may in the middle of the day be observed flying with great rapidity in pursuit of the smaller insects. These brilliant and beautiful creatures were once, and for a considerable time, inhabitants of the water: in that state, as larvæ, they are six-footed and very active. The *Libellula varia*, or great variegated libellula, which makes its appearance towards the decline of summer, is an insect of singular beauty. The female drops her eggs in the water, which on account of their specific gravity fall to the bottom; after a certain period they are hatched into larvæ. In the larva and pupa state they remain full two years, and when they have attained their size they prepare for their ultimate change, and creeping up the stem of some water plant, they make a sudden effort, by which the skin of the back and head is forced open, and the enclosed libellula emerges. This process is always performed in a morning and during a bright sun shine. In this and the other species of the libellula tribe, the structure of the eye is deserving of notice. According to Lewenhoek there are more than 12,000 lenses in each eye of this animal.

LIB'ERAL ARTS, such as depend more on the exertion of the mind than on manual labour, and regard intellectual improvement and amusement, rather than the necessity of subsistence.

LI'BER, in botany, the inner bark of a plant, or third integument, which is membranaceous, juicy, and flexible. From this is gradually formed the wood.

LIBER'TUS, in Roman antiquity, a person who from being a slave had obtained his freedom. The *liberti* were such as had been actually made free themselves; the *libertini* were the children of such persons.

LIB'ERTY, in general, denotes a state of freedom, as distinguished from slavery. According to Cicero, it is the power of living as a man pleases, or without being controlled by another: in a legal sense, liberty signifies some privilege that is held by charter or prescription. Liberty is of various kinds:—1. *Natural* liberty is a state of exemption from the control of others, and from positive laws and the institutions of social life. 2. *Civil* liberty is the security from the arbitrary will of others, which is afforded by the laws. 3. *Political* liberty is civil liberty in a more extensive sense: it properly designates the freedom of a nation or state from all unjust abridgment of its rights and independence by another nation. 4. *Religious* liberty, or *liberty of conscience*, is the free right of adopting and enjoying opinions on religious subjects, and of being allowed to worship the Supreme Being according to the dictates of conscience, unfettered by external control.——*Liberty of the press*, the free power of publishing what one pleases; subject, however, to punishment for publishing what is mischievous to the public morals, or injurious to individuals. That this glorious privilege should be so monstrously abused as it is at present, every right-minded individual in the country must seriously deplore. How true, alas! is the trite remark, that the liberty of the press, though intended as a boon to society, often becomes a curse!——The *cap of liberty* (blue, with a white border) is used in England as a symbol of the constitutional liberty of the nation, and Britannia sometimes bears it on the point of her spear; though she has more commonly the trident of Neptune. In France, a red cap was the badge of the Jacobin club.

LI'BRA, in astronomy, the *Balance*, the sixth sign of the zodiac; so called because when the sun enters it, the days and nights are equal.——*Libra*, in Roman antiquity, a pound weight; also a coin, equal in value to twenty denarii.

LI'BRARY, a word used either to denote a collection of books, or the apartment or edifice for holding them. The first public library of which we have any certain account in history, was founded at Athens by Hipparchus, 526 B.C. The second of any note was founded at Alexandria by Ptolemy Philadelphus 284, and was burnt by the Roman army 47 B.C., 400,000 valuable books

IN MODERN TIMES THE WORD "LIBERAL" HAS HAD A POLITICAL SIGNIFICATION, INCLINING TO THE DEMOCRATIC OR REPUBLICAN PRINCIPLE.

being destroyed in that conflagration. A second library, formed from the remains of the first at Alexandria, by Ptolemy's successors, and reputed to have consisted of 700,000 volumes, was totally destroyed by the Saracens, at the command of the caliph Omar, A.D. 642. How many treasures of ancient lore were thus irremediably lost, must ever remain unknown; but it is more than probable, when we consider the labour of transcribing, that a very trifling portion of the literature of different ages has been preserved to us. The most valuable libraries in Europe, at present existing, are stated to contain printed books and manuscripts as follows:—The Royal Library, Paris, 700,000 vols. and 80,000 MSS. The Bodleian Library, Oxford, 420,000 vols. and 30,000 MSS. The Royal Central, Munich, 500,000 vols. and 16,000 MSS. The Vatican, Rome, 100,000 vols. and 40,000 MSS. University, Göttingen, 300,000 vols. and 5,000 MSS. British Museum, 308,000 vols. and 22,000 MSS. Vienna, 350,000 vols. and 16,000 MSS. St. Petersburg, 400,000 vols. and 16,000 MSS. Naples, 300,000 vols. and 6,000 MSS. Dresden, 300,000 vols. and 2,700 MSS. Copenhagen, 400,000 vols. and 20,000 MSS. Berlin, 250,000 vols. and 5,000 MSS. The foregoing being given in round numbers, it can only be regarded as comparatively correct; but it serves to convey some idea of the vastness of these collections as well as their relative magnitudes.

LIBRA'TION, in astronomy, an apparent irregularity of the moon's motion, whereby she seems to librate about her axis, sometimes from the east to the west, and now and then from the west to the east; so that the parts in the western limb or margin of the moon sometimes recede from the centre of the disk, and sometimes move towards it, by which means they become alternately visible and invisible to the inhabitants of the earth.——*Libration of the earth*, is sometimes used to denote the parallelism of the earth's axis, in every part of its orbit round the sun.——*Libration*, in mechanics, a term signifying a balance, but more particularly the oscillating movement of a pendulum.

LI'CENSE, in law, an authority given to a person to do some lawful act. A license is a personal power, and therefore cannot be transferred to another. If the person licensed abuse the power given him, he becomes a trespasser. A license may be either verbal or written; when written, the paper containing the authority is called a *license*.

LICEN'TIATE, in law, one who has full license to practise any art or faculty; generally, a physician who has a license to practise, granted by the college of physicians.

LICH'EN, in botany, a genus of the *cryptogamia* class of plants, in the order *algæ*, which have the most perfect fructification of all the mosses: the flowers are monopetalous, standing on a pedicle, and divided into segments at the limb, somewhat like stars, buttons, mushrooms, &c. In this family of plants there are about 1200 known species; and they are common every where, adhering to rocks, the trunks of trees, and barren soil. They are generally perennial, and grow by receiving moisture through all parts of their surface. Among them is the *Lichen Icelandicus*, a plant whose medicinal properties have been highly extolled as a remedy in consumptive disorders. It is extremely mucilaginous, and to the taste bitter, and somewhat astringent. Dr. Crichton observes, that during seven months' residence at Vienna, he had frequent opportunities of witnessing its effects, and that, though cures were sometimes effected, it by no means anwered the high expectations he had formed of it. That it strengthens the digestive powers, and proves extremely nutritious, there can, however, be no doubt. It is commonly given in the form of a decoction: an ounce and a half of the lichen being boiled in a quart of milk: of this a tea-cup full is directed to be drunk frequently in the course of the day.

LICHENOG'RAPHY, the science which illustrates the natural history of the lichens.

LIC'TORS, in Roman antiquity, officers or beadles who carried the fasces before the chief magistrates whenever they appeared in public. It was also a part of their duty to be the public executioners in beheading, scourging, &c. A dictator was attended by twenty-four lictors; a consul by twelve; the master of the horse, six; a prætor, six; and each vestal virgin had one.

LIEGE, in law, a term used either as *liege lord*, signifying one that acknowledges no superior, or the chief lord of the fee; or as *liege man*, he who owes homage and allegiance to the liege lord. By the term *liege people* is meant the subjects of a monarch, because they owe him their allegiance.

LIEN, in law, the right which one person, in certain cases, possesses of detaining property belonging to another, when placed in his possession, until some demand, which the former has, is satisfied. Liens are of two kinds: *particular liens*, that is, where the person in possession of goods may detain them until a claim which accrues to him from those identical goods is satisfied; and *general liens*, that is, where the person in possession may detain the goods, not only for his claim accruing from them, but also for the general balance of his account with the owners. Some liens also are created by express agreement, and some by usage.

LIEN'TERY, in medicine, a kind of diarrhœa, wherein the food passes immediately through the intestines with little or no alteration.

LIEUTEN'ANT, an officer who supplies the place, and discharges the office of a superior in his absence. Of these, some are civil, as the lord-lieutenants of kingdoms, and the lord-lieutenants of counties; and others are military, as the lieutenant-general, lieutenant-general of the artillery, lieutenant-colonel, lieutenant of the Tower, lieutenants of horse, foot, or of ships of war.——The *Lord-lieutenant of Ireland* is properly a viceroy, and has all the state and grandeur

THE ROMAN LICTORS WERE FREE MEN, BUT THEY WERE GENERALLY CHOSEN FROM AMONG THE LOWEST CLASSES OF THE PEOPLE.

THE MOORS IN SPAIN HAD, IN THE TWELFTH CENTURY, SEVENTY PUBLIC LIBRARIES, THAT OF CORDOVA CONTAINING 250,000 VOLUMES.

of a king of England, except being served upon the knee. He has the power of bestowing certain offices under the government, of creating knights, and of pardoning all crimes except high treason. He used also to call and prorogue the parliament, but no bill could be passed without the royal assent.—— *Lord-lieutenants of counties*, are officers who, upon any invasion or rebellion, have power to raise the militia, and to give commissions to colonels and other officers, to arm and form them into regiments, troops, and companies. Under the lord-lieutenants are *deputy-lieutenants*, who have similar power; these are chosen by the lord-lieutenants, out of the principal gentlemen of each county, and presented to the king for his approbation.——*Lieutenant-general* is an officer next in rank to the general.——*Lieutenant-colonel* is the officer between the colonel and major.——A *lieutenant*, simply, is the officer next below a captain. In the navy, there are *first* and *second* lieutenants, with different pay.

LIFE, in a general sense, is that state of animals and plants, or of any organized beings, in which their natural functions and motions are performed, or in which the organs are capable of performing their functions. The life of an animal body may also be spoken of in a chemical and a physiological sense. 1. *Its chemical life*, which consists in that attraction of the elements, by which the vital principle, diffused through the solids and fluids, defends all the parts of the body from putrefaction. 2. *Its physiological life* consists in the action of inorganic parts proper to each, as the action of the heart and vessels; so that, these actions ceasing, the body is said to be physiologically dead. In the "Medico-Chirurgical Review" it is stated, that Dr. Caspar, of Berlin, after having examined the current opinions on the average duration of human life, and the most satisfactory method of ascertaining such a result, concludes by embodying the general principles of his researches as follows:—1. The proportion of births to the actual stationary population of any place, expresses, or is relative to, the medium duration of life in that population. (For example, suppose this proportion to be in the ratio of one to twenty-eight, and the average life of the inhabitants of the place will be found to be twenty-eight years.) 2. The female sex enjoys at every period of life, except at puberty (at which epoch the mortality is rather greater among young females), a greater longevity than the male sex. 3. Pregnancy and labour occasion, indeed, a considerable loss of life; but this loss disappears, or is lost, in the general mass. 4. The so-called climacteric periods of life do not seem to have any influence on the longevity of either sex. 5. The medium duration of life, at the present time, is in Russia about twenty-one years; in Prussia, twenty-nine; in Switzerland, thirty-four; in France, thirty-six; and in England, thirty-eight years. 6. The medium duration of life has, in recent times, increased very greatly in most cities of Europe. 7. In reference to the influence of professions or occupations in life, it seems that ecclesiastics are, on the whole, the longest, and medical men the shortest livers; military men are nearly between the two extremes; but yet proportionally, they, more frequently than others, reach very advanced years. 8. The mortality is generally greater in manufacturing than in agricultural districts. 9. Marriage is decidedly favourable to longevity. 10. The mortality among the poor is always greater than among the wealthier classes. 11. The mortality in a population appears to be always proportionate to its fecundity: as the number of births increases, so does the number of deaths at the same time.

LIFE-BOAT, a vessel so constructed as to be able to put to sea in the most stormy weather, and withstand the fury of a tempestuous sea; whereby many lives are annually saved from wrecks and vessels in distress.——By an article in the "Railway Magazine," we are informed that a new safety boat has been built by a Mr. Francis, of New York. It is described as being 28 feet long and 5½ wide, the planks overlapping, and fastened with copper nails. The side planking is double, within which are fourteen tubes 13 feet long, extending from the keel to the deck, and holding fifty-two feet of hydrogen gas, which will buoy up about 4000 pounds weight, when the boat is filled with water. To the sides of the boat are attached twenty life-ropes, which could sustain 100 persons if necessary.—— *Life-Ships*. It appears that Mr. Williams, of the Dublin Steam-boat Company, has improved upon the Chinese plan of dividing the hull of a vessel into sections, each of which should be completely water-tight. He divides the vessel into five compartments by means of four bulk-heads of iron. The central section of this division is occupied by the engine boiler and coal bankers, thus detaching them entirely from all other parts of the vessel; while the others are so arranged, that it may safely be said, that, unless the water break into the vessel in all its sections at the same time (which may be considered impossible), there can be no danger of submersion; and experience has proved that a small addition of buoyancy would prevent a vessel from sinking, after it had been so immersed that the deck was level with the surface of the sea. Nor is the protection which these iron bulk-heads afford against fire scarcely less important. The circumstance of any part of a vessel taking fire is followed by the same evil as that of the irruption of water or collision; namely, its irresistible transmission, at once, through all parts of the vessel; but these iron bulk-heads, being air-tight, must stop the spread of flame by preventing the introduction of any draft or current of air, so much to be dreaded in cases where the materials are combustible.

LIFE-ESTATES, in law, freehold estates not of inheritance.

LIFE-GUARDS, in military affairs, the body-guard of a sovereign prince.

LIG'AMENTS, in anatomy, elastic substances in an animal body, softer than cartilages and harder than membranes, which serve to strengthen the juncture, particularly of the bones. They are divided generally into *capsular* ligaments, which surround the joints like a bag, and *connecting* ligaments.

LIG'ATURE, in surgery, a chord, band, or string, of various thickness, covered with white wax, for the purpose of tying arteries, veins or other parts.——In music, a band or line connecting notes.——*Ligatures*, in mathematics, compendious notes, or characters by which are represented the sums, differences, or rectangles of different quantities.

LIGHT, in physics, that ethereal agent or matter, of the presence of which we are informed by the sensibility of the visual organs. By depicting an image of external objects on the retina of the eye, it announces to animals the presence of the bodies which surround them, and enables them to distinguish these bodies into transparent, opaque, and coloured. These properties are so essentially connected with the presence of light, that bodies lose them in the dark, and become undistinguishable. Light is universally expanded through space. It exerts peculiar actions, and is obedient to the laws of attraction, and other properties of matter. It is consequently an object of research, both in optics and in chemistry; the first inquires into its form and laws; the second, its essence. Light, according to the Newtonian doctrine, which no subsequent discovery or theory seems to have discredited, is composed of inconceivably small particles of matter, of different magnitudes; which are emitted or reflected from every point in the surface of a luminous body, in right lines, and in all directions, with an unparalleled velocity; and whose power or intensity decreases as the squares of the distance increase. That light is a material substance, appears from its being propagated in time, and from its acting upon and producing great alterations in other bodies; but that its particles are inconceivably small appears from this, that the greatest quantity of flame is found to have scarce any sensible gravity or weight: also, because these particles pervade the pores of all transparent bodies, however hard or heavy: yet, small as they are, the rays of light consist of different sorts of these particles. That the particles of light have not only magnitude, but also in different degrees, is one great discovery of the Newtonian philosophy. This is absolutely proved by the different refrangibility they are found to display in passing through a prismatic figure of glass or water; for the power of the prism detains the issuing particle, and draws it a little towards the surface; and, since this power is the same, it would have the same effect on all the particles of light, if they were all of an equal magnitude, because they have all an equal velocity. But since this effect is different among the particles, some being detained and drawn aside to a greater distance than others, it follows, they must be less in magnitude, to become more subject to the influence of the attracting surface; in like manner as the electric effluvia will act upon and agitate very small and light bodies much sooner, and more easily, than they can move those which are larger. The velocity of light exceeds that of a cannon-ball by one million five hundred and fifty thousand times. It is calculated to travel from the sun to the earth in eight minutes and thirteen seconds.——*Light, in chemistry.* Light is considered by modern chemists, as a simple elementary body; but they have not yet been able to form a theory on this subject, in which considerable difficulties are not involved. Light manifests itself to the mind through the mediums of two senses. To the organs of vision it presents forms and colours; and to those of touch, the phenomenon of heat. It is observable, that experience so uniformly teaches us to unite the ideas of light and heat, that none but the philosopher, and he scarcely with intelligibility, would talk of *fire* that is not *luminous*, or *light* that is not *warm:* the first step, therefore, towards an analytical examination of this matter, is to separate in our minds, the *warmth* and the *light* of our hearths. To assist this attempt, we must remember that fire certainly can exist, without the company of light, since both coals and iron may frequently be met with in a state of perfect blackness, combined with violent heat.—— It has long been known that the solar light is capable of producing powerful chemical changes. One of the most striking instances of it is its power of darkening the white chloride of silver, an effect which takes place slowly in the diffused light of day, but in the course of two or three minutes by exposure to the sunbeam.——In order to facilitate the doctrine of light, an explanation of the following terms made use of by philosophers are given:—A *ray of light* is an exceedingly small portion of light as it comes from a luminous body. A *medium* is a body which affords a passage for the rays of light. A *beam of light* is a body of parallel rays. A *pencil of rays* is a body of diverging or converging rays. *Converging* rays are rays which tend to a common point. *Diverging* rays are those which come from a point, and continually separate as they proceed. The rays of light are *parallel*, where the lines which they describe are so. The *radiant point* is the point from which diverging rays proceed. The *focus* is the point to which the converging rays are directed.——*Effects of light on vegetables.* We have elsewhere remarked that most of the discous flowers follow the sun in his course; that they attend him to his evening retreat, and meet his rising lustre in the morning with the same unerring law. It is also well-known that the change of position in the leaves of plants, at different periods of the day, is entirely owing to the agency of light, and that plants which grow in windows in the inside of houses, are, as

ANIMALS, AS WELL AS PLANTS, REQUIRE THE PRESENCE OF THE RAYS OF THE SUN TO GIVE THEM THEIR DISTINCTIVE COLOURS.

PLANTS DEPRIVED OF LIGHT BECOME WHITE, AND CONTAIN AN EXCESS OF SACCHARINE AND AQUEOUS PARTICLES.

it were, solicitous to turn their leaves towards the light. The term *etiolation* has been given to this phenomenon, and the plants, in which it takes place, are said to be *etiolated* or *blanched*. In short, the more plants are exposed to the light, the *more colour* they acquire. Sir Humphry Davy found, by experiment, that red rose-trees carefully excluded from the light, produce roses almost white. He likewise ascertained that this flower owes its colour to light entering into its composition; that pink, orange, and yellow flowers imbibe a smaller portion of light than red ones; and that white flowers contain no light. But vegetables are not only indebted to the light for their colour: taste and odour are likewise derived from the same source. It moreover contributes greatly to the maturity of fruits. This seems to be the cause why in tropical climates, fruits and vegetables are in general more odoriferous, of a stronger flavour, and abound more with aromatic resins. The same kind of influence extends to the *animal* creation. Mankind, birds, beasts, fishes, and insects, all are, more or less, dependent on light for their beauty and vigour.

LIGHTHOUSE, a tower or lofty building on the sea-coast, intended to direct seamen in navigating ships at night, and consisting of an intense body of light, radiated by concave reflectors and convex lenses, sometimes coloured for distinction's sake, and made to change and revolve as a further means of distinction. To understand the importance of lighthouses, it may be proper to state, that the number of British vessels shipwrecked annually is about 550, or *one and a half per day*. The average burden per ship of the mercantile navy is about 110 tons: and, if we value old and new together at half the price of building, or 5*l*. 10s. per ton, we have 600*l*. for the value of each, and 330,000*l*. for that of the whole; which may be reduced to 300,000*l*. by deducting the value of sails, masts, and other materials, saved from some of those stranded. If we add an equal sum for the value of the cargoes, the whole loss from shipwrecks will be 600,000*l*. per annum. This statement proceeds on an old estimate from 1793 to 1829; but Mr. M'Culloch says, in the Supplement to his Dictionary, that the number of ships lost, or driven on shore, in 1833, was no less than 800. It is probable, then, that the annual loss by shipwreck is not much short of a million sterling. If one-fifth part of this loss could be prevented by additional lighthouses, the saving in money would amount to a million in five years, to say nothing of the still more important saving in human life.——The following particulars respecting the construction of *Metallic Lighthouses*, as proposed by Capt. S. Brown, may be deemed, in a national point of view, both important and interesting:—"It has been proposed to place a lighthouse on the Wolf Rock, near Land's End, a position where it would be exposed to the most violent storms of the Atlantic; and a plan was drawn up for the purpose by Mr. Stevenson, who holds a high rank in this department of engineering; which plan, Mr. Brown thinks, would require fifteen years for its execution, and cost 150,000*l*. Mr. Brown undertakes to erect one of bronze, 90 feet high, which would answer the purpose as well as the stone one of 134 feet, for 15,000*l*., and to complete it in four months. Mr. Brown's proposed metallic lighthouse is 14 feet in diameter at the bottom, and 4 feet at the thinnest part. The lower half, called the base, is in four pieces, each piece consisting of a portion of a hollow cone or parabaloid, wider below than above, and about 10 feet high; the lower piece is sunk 3 feet into the rock, and is 14 feet in diameter at its under margin; the fourth piece is 6 feet in diameter at top. These four pieces fit into each other, the neck of the lower passing into the socket of the upper, and both being secured by flanges; so that the joints are, in some degree, stronger than the entire part of the shaft. Above these is the smaller part of the shaft, which is in three pieces of nearly the same length, and fitted in the same manner. Above this, the shaft widens out into an inverted cone, which forms one piece, and supports the more important parts. These are, first, the keeper's house, which is 8 feet in diameter, and 7 feet high, with a gallery round it, 'for look-out and walking exercise.' Next, the lantern, 9 feet wide and 10 feet high to the cupola for containing the lights. The house, or sitting-room, is made of two concentric cylinders of sheet copper, 9 inches asunder, to equalize the temperature, and attached to each other by rivets: it is formed into compartments for bookcases, shelves, and lockers, with a recess for the back of the stove. Immediately below the house, in the swell of the shaft, are the sleeping-berths. To complete the description of the column, we shall add, that the upper section of the base contains two tanks, one for oil, and one for fresh water; the next section, above, is for coals and provisions: and the one above that, a general store. Access is obtained from below by the chain ladder reaching down to the sea; and by ladders in the inside, by which the keepers mount to their aerial abode. The whole work, 90 feet high, would cost 16,000*l*. or 17,000*l*., if entirely of bronze; 11,300*l*., if the base were bronze and the upper part cast iron; or 9,000*l*. if entirely of cast iron; and it would be erected in four months."

LIGHTNING, in meteorology, a flash of light suddenly appearing in the atmosphere, and commonly disappearing in the same instant; sometimes attended with clouds and thunder, and sometimes not. Lightning is proved, by the experiments of Franklin, to be produced by the electric fluid. Thunder is the explosion of clouds charged with that fluid: and lightning is to thunder, what the *flash* is to the *report* of gunpowder. A very remarkable property of lightning, the zigzag kind especially, when near, is its seeming omnipresence. If, when a clap of thunder, accompanied with this species of lightning, occurs, two

persons are looking different ways, both will perceive the flash; not only that indistinct illumination of the atmosphere which is occasioned by fire of any kind, but the form of the lightning itself, and every angle it makes in its course will be as distinctly seen by each, as if they had looked directly at the cloud whence it proceeded: and if a person were at that moment looking at a book, or any other object, that he held in his hand, he also would distinctly see the form of the lightning between his eyes and the objects. This property seems peculiar to lightning. The different forms of the flashes of lightning are all equally found in electric sparks; so that an account of the origin of this difference of form may, by analogy, be drawn. Where the quantity of electricity is small, and, consequently, incapable of striking at any considerable distance, the spark appears straight, without any curvature, or angular appearance; but where the electricity is very strong, and, of consequence, capable of striking an object at a pretty considerable distance, it assumes a crooked or zigzag form.

LIG'NUM VITÆ, or GUAIACUM, in botany, a large tree, rising at its full growth to the height of forty feet, and measuring from fifteen to eighteen inches in diameter; having a hard, brittle, brownish bark, not very thick. The wood is firm, solid, ponderous, very resinous, of a blackish yellow colour and a hot aromatic taste. It is imported into England in large pieces of four or five hundred weight each, and, from its hardness and beauty, is in great demand for various articles of turnery ware, and for trucks of ship's blocks. The wood, gum, bark, fruit, and even the flowers possess certain medicinal virtues.

LIG'NITE, in geology, one of the most recent formations, being the carbonaceous remains of forest trees. From the lignite found in the neighbourhood of Cologne, the brown colours, *umber* and *earth of Cologne* are prepared.

LIGUS'TRUM, in botany, *Privet*, a genus of plants, class 2 *Biandria*, order 1 *Monogynia*. The species are shrubs.

LIG'ULATE, or LIG'ULATED, in botany, an epithet for a kind of compound flowers, the florets of which have their corollets flat, spreading out towards the end, with the base only tubular.

LIG'URITE, a mineral occurring in oblique-rhombic prisms, of an apple-green colour occasionally speckled.

LILA'CEOUS, in botany an epithet for plants that belong to the lily tribe, or bear a resemblance to them.

LI'LAC, a beautiful plant or shrub, of the genus *Syringa*, bearing flowers disposed in large pyramidal racemes, and of a bluish or light purple colour. The corolla is funnel-shaped, and divided into four segments; and the flowers have an agreeable fragrance.

LIL'ALITE, a species of argillaceous earth.

LIL'Y, in botany, a magnificent genus of plants, with a bulbous and perennial root, the flower of which is six petalled and campanulated. There are many kinds, of great beauty, and of various colours. The lily is reckoned by Pliny the noblest flower next to a rose; and, according to Dioscorides, it was a royal flower. It is celebrated by the poets for its short-lived beauty.——*Lily of the valley*, a plant of the genus *Convallaria*, with a monopetalous, bell-shaped corolla.

LIMB, in anatomy, a jointed or articulated part of an animal body; as the arm or leg.——In astronomy, the utmost edge or border of the body of the sun or moon.——In mathematics, the utmost edge or border of an instrument.——In botany, the border or upper spreading part of a monopetalous corolla.

LIME, *(calx)* in mineralogy, a very useful earth, found in great abundance in nature, though never in an uncombined state. It absorbs moisture and carbonic acid, and exists as limestone, and in marble and chalk, which, when burnt, become lime. It consists of oxygen, and a metallic base called calcium. It is the basis of the bones, shells, and other hard parts of animals. It fixes the gaseous constituents of water, which in losing their motion, transfer it in great heat to surrounding bodies. In its native state it is called *carbonate of lime*, and burnt to disengage the carbonic acid. When made into a paste of one part water and three parts lime, it is called *hydrate of lime*, and being mixed with silica, alumina, and oxyde of iron, it forms plastic cements and mortars. Its combination with sulphuric acid is known by the name of *gypsum*, or *sulphate of lime:* combined with fluoric acid it constitutes fluate of lime, or *Derbyshire spar*. Lime is much used by tanners, skinners, &c., in the preparation of their leather; by soap-boilers, for dissolving the oil, and facilitating its union with the alkaline salt; and by sugar-bakers, for refining their sugar. ——*Lime water* is used for medicinal purposes; being given internally in spasms, diarrhœa, convulsions of children, &c., and externally applied to burns and ulcers.

LIME, a fruit like a small lemon, the juice of which is a very strong acid, and very much used in the making of punch.

LIM'IT, in mathematics, a determinate quantity, to which a variable one continually approaches.

LIMITA'TION, in law, a certain time prescribed by statute, within which an action must be brought.

LIM'PET, the *Patella* of Linnæus, a testaceous animal, commonly found adhering to oysters. The shell is sub-conic, and its inhabitant a kind of slug.

LIN'DEN TREE, in botany, the Lime-tree, of the genus *Tilia;* distinguished for bearing sweet flowers and an acid fruit.

LINE, in geometry, a quantity extended in length, without breadth or thickness. Lines are either curves or right lines.——In fortification, whatever is drawn on the ground of the field, as a trench, or a row of gabions, &c.——*Lines* are most commonly made to shut up an avenue, or entrance to some place, and are distinguished into *lines of approach*, of *defence*, of *communica-*

WATER IS RENDERED HARD BY THE SULPHATE OF LIME IT CONTAINS. THE CRUST FREQUENTLY SEEN ON THE INSIDES OF KETTLES AND BOILERS IS OCCASIONED BY THE CARBONATE OF LIME IN HARD WATER.

LINEN WORN NEXT THE SKIN RETAINS THE PERSPIRATION, BECOMES IMBUED WITH IT, AND IMPARTS A SENSATION OF COLDNESS.

tion, &c.——*Line*, in genealogy, a series or succession of relations, from a common progenitor. *Direct* line, is that which goes from father to son; being the order of ascendants and descendants. The *Collateral* line, is the order of those who descend from a common father related to the former, but out of the line of ascendants and descendants: in this are placed uncles, aunts, cousins, nephews, &c.——*A ship of the line*, in naval affairs, any vessel of war large enough to be drawn up in the line of battle. ——In military affairs, regular troops, in distinction from the militia, volunteers, &c., are called troops of *the line*.——*Meridian line*, in geography, an imaginary line drawn through the two poles of the earth and any part of its surface.

LIN'EAR, in botany, an epithet for a leaf like a line, or of the same breadth throughout, except at the extremities.——*Linear numbers*, in mathematics, such as have relation to length only; such is a number which represents one side of a plane figure. If the plane figure be a square, the linear number is called a root.

LIN'EATE, in botany, an epithet for a leaf marked longitudinally with depressed parallel lines.

LIN'EN, cloth made of flax, being much finer than that which is made of hemp. In common linen the warp and woof cross each other at right angles; if figures are woven in, it is called *damask*. The species of goods which come under the denomination of linen, are table-cloths, sheeting, cambric, lawn, shirting, towels, &c. The chief countries in which linens are manufactured are Russia, Germany, Switzerland, Holland, Scotland, and Ireland. In several parts of Germany, Switzerland, Flanders, and France, linens are frequently embellished with painting; and in England the produce of the Irish linen manufacture is beautifully printed in the manner of calicoes.——In the middle ages, linen and woollen cloth formed the only materials for dress; and fine linen was held in very high estimation. In more ancient times linen formed the dress of the Egyptian priests, who wore it at all their religious ceremonies.

LING, in ichthyology, the *Gadus molva* of Linnæus, a sort of cod-fish which inhabits the northern seas. The ling deposits its spawn in June, and is in perfection from February to May. It is salted in great quantities, both for exportation and home consumption.

LINGUA'LIS, in anatomy, the name of a muscle which is said to pass from the root of the *os hyoides*, to the top of the tongue.

LIN'IMENT, in medicine, an oily substance, of a middle consistence, between an ointment and oil, but so thin as to drop.

LINNÆAN SYSTEM, a scientific arrangement of all natural objects, as animals, plants, and minerals, into three kingdoms, subdivided into classes, orders, genera, species, and varieties, with a description of their generic and specific characters. It received this appellation from Charles Linné (latinized Linnæus), the celebrated Swedish naturalist. [See a sketch of the life of LINNÆUS, in the "*Biographical Treasury.*"]

LIN'NET, in ornithology, the *Fringilla linota*, a small singing bird of the finch kind, of a brown colour.

LIN'SEED, the seed of the flax-plant, which yields much oil by pressure, and when purified forms excellent lamp-oil, and abundance of carburetted hydrogen gas for gas lights. It is also much used in medicine, its qualities being mucilaginous, lubricating, and emollient.

LIN'SEY WOOL'SEY, cloth made of linen and woollen mixed together.

LINT, in surgery, linen scraped into a soft, woolly substance, fit for applying to wounds, either simply, or covered with unctuous substances.

LIN'TEL, in architecture, a piece of timber that lies horizontally over door-posts and window-jambs.

LI'NUM, or FLAX, in botany, a genus of plants, class 5 *Pentandria*, order 5 *Pentagynia*.——The *linum usitatissimum*, or common flax, is the species of *linum* cultivated for manufactures and medicine. Its stems are about two feet and a half high, garnished with narrow spear-shaped, alternate grey-coloured leaves, and divided at their top into peduncles, or foot-stalks, terminated by small, blue, bell-shaped flowers, appearing in June and July, and succeeded by large round capsules, each containing one seed. [See FLAX.]

LI'ON *(leo)*, in zoology, a quadruped of the genus *Felis*, strong, fierce, and rapacious; sometimes called the king of beasts for his combined activity, strength, and majesty of deportment. Lions are now found only in unfrequented parts of Asia and Africa. They measure about eight feet from the nose to the rump, with a tail about four feet; the colour being a pale brown, or tawny yellow, and the male having a bushy mane, which the lioness is without. Their muscular strength is prodigious, and their roar and assault terrible; but, when brought up tame, and unused to attack and defence, they allow their keepers to play with them, and are often kind to small animals placed in their dens. From time immemorial, praises have been bestowed on this animal for grateful affection, dauntless courage and merciful forbearance, but modern naturalists have not scrupled to deny him all these excellent qualities. Mr. Burchell, the African traveller, says, "when men first adopted the lion as an emblem of courage, it would seem that they regarded great size and strength as indicating it; but they were greatly mistaken in the character they have given to this indolent, skulking animal, and have overlooked a much better example of true courage, and other virtues also, in the bold and faithful dog." The lioness brings forth from three to four cubs at a birth, which she suckles for a year, at which time their colour is a mixture of reddish and gray, with a number of brown bands. The male attains maturity in seven, and the female in six years. The strength of the lion is

THE LINEN TRADE OF IRELAND HAS ALWAYS BEEN PROMOTED AND ENCOURAGED BY DIRECT LEGISLATIVE ENACTMENTS.

such, that a single stroke with his paw is sufficient to destroy most animals. He generally lurks near a spring, or by the side of a river, where he has an opportunity of surprising such animals as resort to the water to quench their thirst. Here he lies in wait, crouched in some thicket, till his prey approaches, and then, with a prodigious leap, seizes it at the first bound. At night he generally prowls abroad in search of his prey, the conformation of his eyes being, like those of the common cat, well fitted for seeing in a dim light. His roar is loud and terrific, especially when heard in the solitary wilds he inhabits; and when enraged, his cry is still more appalling than his roar. When irritated, he lashes his sides with his tail, in order to excite himself by a prickle or spur which is concealed in the tuft of long black hairs at the end of it. This circumstance is noticed by Homer, and Blumenbach some years since verified the existence of the prickle; but the fact was unnoticed by naturalists, till very recently, when it was further corroborated on the death of two lions in the Menagerie Royal at Paris.

LI'ONCEL, in heraldry, a small lion, the name by which lions are said to be blazoned when there are several in one escutcheon.

LIP'OGRAM, a writing in which a single letter is wholly omitted.

LIQUEFACTION, in chemistry, the conversion of a solid into a liquid by the sole agency of heat or caloric.

LIQUEUR' *(French)*, a name for various palatable spirituous drinks, in which some aromatic infusion generally predominates and gives to it a name. Some are simple *liqueurs*, as *noyau*, anise-water, &c. Others have more saccharine and spirituous matter, as the *anisette*, *curaçoa*, &c. And a third kind are the creams, or superfine liqueurs, such as *rosoglio*, *maraschino*, &c.

LIQ'UID. Fluids have been divided into two classes, viz. those which are elastic, and the non-elastic, or those which do not sensibly diminish in bulk when subjected to pressure. The first class are airs or gases: the second liquids: hence we may define a liquid to be a fluid not sensibly elastic, the parts of which yield to the smallest pressure, and move on each other.——In grammar, a letter which has a smooth flowing sound, or which flows smoothly after a mute; as *l* and *r*, in *bla*, *bra*. *M* and *n*, and *s*, are also *liquids*.

LIST, a roll or catalogue, as the monthly *army list*, the *navy* list, &c.——*Lists*, in archæology, the enclosed ground wherein knights held their jousts and tournaments. Hence, *to enter the lists* is to engage in contest.

LIT'ANY, a solemn form of supplication to God, in which the priest utters some things fit to be prayed for, and the people join in their intercession, saying, *we beseech thee to hear us, good Lord*, &c. Originally, the litany was a distinct service by itself, and used some time after the morning prayer was over; at present it is made one office with the morning service, being ordered to be read after the third collect for grace, instead of the intercessional prayers in the daily service.

LITERA'TI, in general, denotes men of learning.——In antiquity, those who were branded with any letters by way of ignominy, were so called.

LIT'ERATES, in ecclesiastical affairs, a name given to those who are admitted to ordination by the bishop without having taken a university degree.

LIT'ERATURE, in a general sense, comprehends such an acquaintance with letters or books as may impart to the student a knowledge of the classic authors, history, grammar, rhetoric, logic, &c. as well as the sciences. *Literature* and *literary* are in short applied to those branches of study which come within the scope of a general reader, rather than to works of mere erudition and abstract science.——In *literary history* the word has a more extensive meaning. Hence the phrase "literature of the middle ages" means the aggregate of works written during the middle ages; "medical literature," whatever of note that has been written on medicine, &c. In a more limited sense, *literary history* treats of learned writings, their contents, fate, translations, &c., which is *bibliography*; and of the lives of their authors, the circumstances under which they wrote, &c., forming a main branch of universal *biography*.

LITH'ARGE, in chemistry, an oxyde of lead, in an imperfect state of vitrification.

LITH'IA, a new alkali, found in a mineral called petalite, of which the basis is a metal called *lithium*.

LITH'IC ACID, in chemistry, an acid extracted from the urinary calculi, by digesting them in caustic lixivium.

LITH'OCALLA, a cement that unites stones.

LITH'OCARP, fruit petrified; fossil fruit.

LITH'OCHROMICS, the art or process of painting in oil upon stone, and of taking impressions on canvass; an ingenious invention of a French artist. It was afterwards improved upon by Senefelder, the inventor of lithography.

LITHODEN'DRON, a name for coral, which is so called from its resembling a branch.

LITHOGEN'ESY, the doctrine or science of the origin of minerals composing the globe, and of the causes which have produced them.

LITHOGLYPH'ITE, a fossil that presents the appearance of being engraved or shaped by art.

LITHOG'RAPHY, the art of engraving on stone, and taking impressions therefrom on paper by means of ink and a rolling-press: an art invented by Mr. Senefelder, of Munich, in Bavaria, and now brought to great perfection in France, England, &c. The process is as follows:—The writing, or design, is drawn on stone with a greasy composition formed of tallow, bees'-wax, shell-lac, and common soap, which will not unite with, or be affected by water: pre-

THE PARTICLES OF LIQUIDS MOVE AND PRESS IN ALL DIRECTIONS; THOSE OF WHICH SOLIDS ARE COMPOSED PRESS ONLY DOWNWARDS.

viously to printing, the surface of the stone is wetted, and it is therefore prevented by the moisture from receiving the printing ink when applied, except on those places covered with the greasy composition. A roller charged with printing ink being passed over the stone, the ink readily adheres to the greasy lines of the drawing, but does not adhere to the other parts of the surface which retain the water. The print is obtained by pressure, which removes the printing ink from the lines of the drawing; and between each impression the operation of wetting the stone with a sponge, and applying the roller charged with printing ink, is repeated. This is a mere outline of the operation; much of course depends on the care and skill of those employed, as well as in the quality of the materials. The *stones* best adapted for this kind of printing are of a calco-argillaceous nature, and are procured from quarries situated along the banks of the Danube, in Bavaria. The grain is very fine, and, when wetted, they have the property of retaining the water for a considerable time, on which depends their great use in lithography.

LITHONTRIP'TICS, medicines which either break or are supposed to have the virtue of dissolving calculi in the urinary passages.

LITHOT'OMY, in surgery, the operation of extracting a calculus or stone from the bladder.

LIT'MUS, in chemistry, a substance obtained from a kind of lichen, and from which is formed a tincture that serves as a test of the presence of an acid or an alkali. It is employed also for staining marble, and by silk dyers for giving a gloss to more permanent colours.

LI'TRE, a measure of capacity in the system of French measures, containing the thirty-fifth part of an English bushel.

LIT'URGY, a name given to those set forms of prayer which have been generally used in the Christian church. The liturgy of the church of England was composed in the year 1547, since which time it has undergone several alterations, the last of which was at the restoration of Charles II.

LIV'ER, in anatomy, a large viscus, of a deep red colour, situated under the diaphragm, which secretes bile, and transmits it to the duodenum and gall-bladder. In the human body, the liver is divided into two principal lobes, the right of which is by far the largest.

LIV'ERSTONE, in mineralogy, a stone or species of earth of the barytic genus, of a gray or brown colour, which when red hot emits the smell of liver of sulphur, or alkaline sulphuret.

LIV'ERY, a suit of clothes made of different colours and trimmings, by which noblemen and gentlemen have their servants distinguished.——*Livery of seisin*, in law, signifies delivering the possession of lands, &c. to him who has a right to them.

LIV'ERYMAN, a freeman of the city of London, admitted member of some one of the city companies, by which he enjoys certain powers and privileges. From among their number are elected the common council, sheriff, and other superior officers of the city.

LIV'ERWORT, in botany, the name of several species of plants, among which are several of the lichens; but the plant of this name with which we are most familiar is the *hepatica triloba*, bearing a pretty flower early in spring. It once had a temporary reputation for the cure of pulmonary consumption.

LIXIVIA'TION, in chemistry, the process of extracting alkaline salts from ashes by pouring water on them, the water passing through them imbibing the salts.

LIXIV'IUM, in chemistry, lye; water impregnated with alkaline salts imbibed from wood ashes.

LIZ'ARD, an extensive tribe of amphibious animals, classed by Linnæus under the genus *Lacerta*, comprehending the crocodile, alligator, basilisk, chameleon, salamander, &c. But the name is more generally applied to the smaller species of this genus, and of these there is a great variety. The *lizard*, properly so called, is a little reptile of a green colour, with four feet and a tail, and is frequently to be met with in gardens or under dunghills, &c.

LLA'MA, in zoology, an animal inhabiting the mountains of the Andes. When domesticated, they are used in that country as beasts of burden, chiefly in carrying ore from the mines of Peru. Their height is from four to five feet, with long legs and long neck, a small head without horns, and an expressive gentle countenance. They may be said to partake of the nature both of the camel and the sheep—their wool being extremely fine, and each fleece weighing from five to six pounds.

LLOYD'S LIST, a London periodical publication, in which the shipping news received at Lloyd's coffee-house is published. On account of the extensive information which it contains, it is of great importance to merchants. *Lloyd's Coffee-house* has long been celebrated as the resort of eminent merchants, under-writers, merchants, insurance brokers, &c., and the books kept there are replete with valuable maritime intelligence.

LOAD'STONE, the native magnet, a sort of ore dug out of iron mines, on which the needle of the mariner's compass is touched, to give it a direction north or south. It is a peculiarly rich ore of iron, found in large masses where there are mines of that metal. It is of a deep iron gray, and when fresh broken, it is often tinged with a brownish or reddish colour. [See MAGNET]

LOAM, a kind of fat, unctuous, and tenacious earth, much used by gardeners in making compost. It is of various colours, generally of a yellowish brown, and is readily diffusible in water.

LOAN, a sum of money confided to another, generally on the security of a promissory note or bond, the guarantee of a third party, or the possession or assignment of property. Sometimes it is effected by go-

vernments on the pledge of certain taxes to pay the interest. This is called a *public loan*. The practice of borrowing money to defray the extraordinary expenses in time of war, which has been adopted in Great Britain during several of our late wars, has given rise to the national debt. Where there is a well-founded system of credit, statesmen think it most advantageous to secure only the regular payment of the stipulated interest, but to leave the payment of the capital at the pleasure of the state; and this is called the *funding system*.

LOBE, in anatomy, any fleshy protuberant part, as the lobes of the lungs, lobes of the ears, &c.——In botany, a division in seeds, such as beans, peas, &c.——*Lobed*, or *Lobate*, signifies divided to the middle into parts distant from each other, with convex margins.

LOBE'LIA, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. They are distinguished by the labiate corolla, and by having the five stamens united in the form of a cylinder, as in the *compositæ*. They are all herbaceous or frutescent, having alternate leaves, and flowers disposed in terminal racemes.

LOB'STER, in ichthyology, a crustaceous or shelly fish of the genus *Cancer*, constituting an article of food. They have large claws and fangs, and four pair of legs. They are said to change their shell annually; and, like all other crustaceous animals, they only increase in size whilst in a soft state. At the sound of thunder, or the firing of cannon, it is asserted that they often lose their claws; and this extraordinary fact appears to be well authenticated: it is also well known that in their combats with each other, the vanquished party generally leaves one of his limbs in his adversary's grasp. Lobsters are extremely prolific; and the eggs are deposited by the female in the sand, where they are soon hatched.

LO'CAL, pertaining to a fixed or limited portion of space.——*Local colours*, in painting, such as are natural and proper for each object in a picture.——*Local medicines*, those destined to act upon particular parts.——*Local actions*, in law, such as must be brought in a particular county, where the cause arises.——*Local problem*, in mathematics, that which admits of innumerable solutions.——*Local militia*, a temporary armed force, embodied for the defence of the country, and exercised within certain limits.

LOCA'LES, in medicine, the fourth class in Cullen's Nosology, which comprehends partial morbid affections, and includes eight orders.

LO'CHIA, in medicine, evacuations which follow child-birth.

LOCK, in mechanics, a piece of ironwork, requiring much art and nicety in contriving and varying the springs, bolts, and different parts to the uses for which they are intended. Locks are of various forms, but the principle on which they all depend is the application of a lever (the key) to an interior bolt, by means of a communication from without; and the security of locks depends upon the impediments (termed *wards*) which may be interposed betwixt this lever and the bolt. Those who have examined the construction of Bramah's, Taylor's, Chubb's, and other patent locks, must be convinced that the security of them is equal to the ingenuity of their inventors. In a very ingenious lock, invented by Mr. Perkins, 24 small blocks of metal, of different sizes, are introduced, corresponding to the letters of the alphabet. Out of these, an indefinite number of combinations can be made. The person locking the door selects and places the blocks necessary to spell a particular word, known only to himself, and no other person, even in possession of the key, can open the door without a knowledge of the same word. Locks are known to have been of great antiquity, because sculptures of locks similar to those now used in Egypt, have been discovered on the great temple of Karnac, whence Denon infers locks were known in Egypt about four thousand years since. A lock resembling the Egyptian is used in Cornwall, and the same has been seen in the Faro Islands; to both which places it was probably taken by the Phœnicians.——*Lock*, the barrier or works of a canal, which confine the water, where the change of level takes place, furnished with gates at each end, which separate the higher from the lower parts of the canal. When a boat passes up the canal, the lower gates are opened, and the boat glides into the lock, after which the gates are shut. A sluice, communicating with the upper part of the canal, is then opened, and the lock rapidly fills with water, elevating the boat on its surface. When the lock is filled to the highest water-level, the upper gates are opened, and the boat, being now on the level of the upper part of the canal, passes on its way. The reverse of this process is performed when the boat is descending the canal.—The amount of elevation and descent made by the locks of a canal, is termed the *lockage*.

LOCOMO'TION, the art or power of moving from place to place. The chief obstacles which oppose locomotion, or change of place, are gravity and friction, the last of which is, in most cases, a consequence of the first; and most kinds of mechanism which are intended to assist locomotion, are arrangements for obviating the effects of gravity and friction. For moving weights over the common ground with its ordinary asperities and inequalities of substance and structure, no piece of inert mechanism is so favourably adapted as the wheel carriage; and whatever tends to diminish the friction, and also to surmount obstacles or inequalities on a road, must naturally be a desideratum in locomotion. For this express object a patent was taken out in 1836, by Mr. Ashdowne, for certain apparatus to be applied to the wheels of carriages, by which a flat chain or series of links presented a level surface for the wheels to run on, form-

COMMON DOOR-LOCKS ARE NOW USUALLY INSERTED IN THE WOOD, INSTEAD OF BEING SCREWED ON, AND WHEN SO PLACED ARE CALLED "MORTISE LOCKS."

ing what was not inaptly called a "portable railway." The death of the inventor interfered with the prosecution of this ingenious plan, but we hear that it is yet likely to be rendered not only practicable, but available to a considerable extent on ordinary roads.—While on this subject we ought to add, that great mechanical skill has been employed, by several ingenious engineers, in the construction of *locomotive steam engines* for moving on common roads; and, though none have yet perfectly succeeded, when we consider the rapid improvements which are making in the various departments of machinery, it is highly probable that carriages of this description will eventually be made to ply on our turnpike roads. [See RAILWAYS, STEAM-ENGINE, &c.]

LOC'ULAMENT, in botany, the cell of a pericarp in which the seed is lodged. Thus we say of a pericarp, it is *unilocular*, *bilocular*, &c.

LO'CUM TE'NENS, a deputy or substitute; one who supplies the place of another, or executes his office.

LO'CUS, in mathematics, the name of a line by which a local or indeterminate problem is solved. *Loci* are expressed by algebraic equations of different orders, according to the nature of the locus.

LOCUS IN QUO, in law, the place where anything is alleged to be done in pleadings, &c.——*Locus partitus*, a division made between two towns or counties, to make trial where the land or place in question lies.

LO'CUST, in entomology, a voracious insect of the genus *Gryllus*, somewhat resembling the common grasshopper. These insects are at times so numerous in Africa and the south of Asia, that they do immense injury to vegetation, literally devouring everything green; and when they migrate they fly in clouds, darkening the air by their numbers. Happily for mankind, this calamity is not frequently repeated, for it is the inevitable precursor of famine and its horrible consequences. Even when dead they are still productive of evil consequences, since the putrefaction which arises from their inconceivable number is so great, that it is justly regarded as one of those desolating pestilences which almost depopulate whole districts of country. Sometimes, though not often, they appear in Europe, and produce the same effects. In the year 591, an army of unusually large locusts ravaged Italy, and being at last cast into the sea (as seems for the most part to be their fate), a pestilence, it is alleged, arose from their stench, which carried off nearly a million of men and beasts. In the Venetian territory, likewise, in 1478, more than 30,000 persons are said to have perished in a famine chiefly occasioned by the depredations of locusts. In Barrow's Travels it is stated, that in Southern Africa the whole surface of the ground might literally be said to be covered with them for an area of 2000 square miles. The water of a very wide river was scarcely visible on account of the dead carcasses that floated on the surface. The larvæ are much more voracious than the perfect insects; and when they are on a march during the day, it is utterly impossible to turn the direction of the troop, which is generally with the wind. It scarcely admits a doubt that these insects are the locusts so accurately described in the Bible. Thus, in Joel ii. 2, &c. "A fire devoureth before them, and behind them a flame burneth: the land is as the garden of Eden before them, and behind them a desolate wilderness; yea, and nothing shall escape them. The sound of their wings is as the sound of chariots, of many horses running to battle; on the tops of the mountains shall they leap, like the noise of a flame of fire that devoureth stubble, as a strong people set in battle array. Before their faces the people shall be much pained; all faces shall gather blackness. They shall run like mighty men: they shall climb the wall like men of war; and they shall march every one in his ways, and they shall not break their ranks; neither shall one thrust another."—Much controversy has arisen on "locusts and wild honey," the food of John the Baptist, in the wilderness, because the commentators have interpreted the former as the fruit of the cassia-fistula, or locust-tree. Dr. Clarke, the traveller, was one of the first to propagate this misconception. There is, however, no doubt of the insects being the food, since Hasselquist mentions locusts being eaten by the Arabs, so that probably this dish was used in the time of St. John. Mr. Forbes, the Oriental traveller, corroborates this account, and adds, "The wild honey is found in the clefts of the rocks of Judea, as abundantly as in the caves of Hindustan." Nay, if we only refer to the book of Leviticus, chap. xi, v. 22, we shall find that locusts constituted a common food among the Jews, and that the different kinds which they were permitted to eat are there specified.

LO'CUST-TREE, in botany, a tree of the genus *Robinia*, distinguished no less for its valuable wood than for the beauty of its foliage and its fragrant white flowers. The leaves are pinnate, and the leaflets very thin and smooth. The wood is compact, hard, capable of receiving a fine polish, and has the property of resisting decay longer than almost any other. It grows very rapidly in the south-western states of America, sometimes reaching to the height of eighty feet; and it is cultivated in Europe for its useful properties as well as for ornament.

LODE, among miners, a metallic vein, or any regular vein or course, whether metallic or not.

LODG'ED, in heraldry, a term for a buck, hart, &c. when lying on the ground; answering to *couchant*, which is applied to a lion or other beast of prey.

LODG'MENT, in military affairs, is a work raised with earth, gabions, fascines, &c. to cover the besiegers from the enemy's fire, and to prevent their losing a place which they have gained, and are resolved, if possible, to keep.

LOG, in navigation, a piece of board,

forming the quadrant of a circle, which is thrown over a ship's side, and surrendered to the free action of the water, to measure either the current, or the ship's rate of sailing.——*Log-line*, the line fastened to the log, which is divided into certain spaces fifty feet in length, by knots or pieces of knotted twine, unreeved between the strands of the line, which show, by means of a half-minute glass, how many of these spaces or knots are run out in half a minute; and as the distance of the knots bears the same proportion to a mile that half a minute does to an hour, whatever number of knots the ship runs in half a minute, the same number of miles she runs in an hour. ——*Log-board*, two boards, shutting like a book, and divided into columns containing the hours of the day and night, direction of the wind, course of the ship, &c., on which an account of the ship's way is marked.——*Log-book*, the book in which the contents of the log-board are transcribed.——*Log-reel*, a reel in the gallery of a ship, on which the log-line is wound.

LOGARITH'MIC, or LOGIS'TIC, an epithet for a curve, so called from its properties and uses in explaining and constructing logarithms, because its ordinates are in geometrical progression.

LOG'ARITHMS, the exponents of a series of powers and roots. When the logarithms form a series of numbers in arithmetical progression, the corresponding natural numbers form a series in geometrical progression, so that the sum of one is the multiple of the other. Thus,

Ar. Pr. 0, 1, 2, 3, 4, 5, 6, &c.
Geo. Pr. 1, 2, 4, 8, 16, 32, 64, &c.

So that if 1 and 3 be added together, 4 corresponds with 16, which is the same as the multiple of 2 and 8, which stand under the 1 and 3. The upper line, therefore, are the logarithms of the lower, and logarithmic tables furnish the intermediate fractions corresponding with the intermediate numbers in the lower line, in the same proportions. A table of logarithms made according to an assumed basis or fundamental ratio, of all numbers, to a certain limit, is called a *logarithmic system*. The most common is that of Briggs, in which the fundamental basis is 10 to 1; hence 1 is the logarithm of 10, 2 of 100, 3 of 1000, 4 of 10,000, &c. The use of logarithms in trigonometry was discovered by John Napier, a Scottish baron, and made known by him in a work published at Edinburgh in 1614. Logarithmic tables are of great value, not only in trigonometry, astronomy, &c., but to all who have to make calculations with large numbers.

LO'GIC, a science that includes the laws of thought and the art of reasoning; its purpose being to direct the intellectual powers in the investigation of truth, and in the communication of it to others.

LOGISTÆ, in antiquity, Athenian magistrates, ten in number, whose office it was to receive and pass the accounts of magistrates when they went out of office.

LOGOG'RAPHY, a method of printing, in which the types form whole words instead of letters. By this method the business would seem to proceed with more expedition and less liability to err. It has been used to a certain extent, but the plan never came into general use, and it has long since been abandoned altogether, from an idea that more time was lost than gained by the operation.

LOG'OGRIPH, a kind of riddle, which consists in some allusion or mutilation of words, being of a middle nature between an enigma and a rebus.

LOG'WOOD, an important article of commerce, much used in the arts, is derived from a low, crooked, prickly tree, found in great plenty at Campeachy, in the bay of Honduras, and is denominated "hæmatoxylon campechianum." Logwood is very dense and firm in its texture, exceedingly heavy, so as to sink in the water, of a deep red colour, and admits of a fine polish. It yields its colour both to spirituous and watery menstrua, but alcohol extracts it more readily than water. Acids turn its dye to a yellow, alkalies deepen its colour, and give it a purple or violet hue.

LOINS, in anatomy, the two lateral parts of the umbilical regions of the abdomen: or the space on each side of the vertebræ, between the lowest of the false ribs and the upper part of the haunch-bone: called also the *reins*.

LOL'LARDS, a sect of early reformers in Germany and England, the followers of Wickliffe. The name was at that time applied to them as one of infamy, the Romish church treating them as the vilest heretics.

LOM'BARDS, a name formerly given to bankers, because the people of Lombardy first followed this branch of commerce. Hence the name of *Lombard-street*, so long noted for its numerous banking-houses.

LOMENTA'CEÆ, in botany, the name of the thirty-third natural order in Linnæus's Fragments, consisting of plants, many of which furnish beautiful dyes, and the pericarp of which is always a pod containing seeds that are farinaceous, or mealy, like those of the bean; as the cassia, the wild senna, logwood, mimosa, or the sensitive plant, &c.——*Lomentum*, or *Loment*, an elongated pericarp, which never bursts.——*Lomentaceous*, furnished with a loment.

LONGEV'ITY, length or duration of life, generally designating great length of life. Lord Bacon observes, that the succession of ages, and of the generation of men, seems no way to shorten the length of human life, since the age of man from the time of Moses to the present has stood at about eighty years, without gradually declining, as one might have expected; but doubtless there are times wherein men live to a longer or shorter age, in every country; and it has been remarked that those generally prove longest-lived who use a simple diet, and take most bodily exercise; and shortest-lived who indulge in luxury and ease; but these things have their changes and revolutions, whilst the succession of mankind holds on uninterrupted in its course. There are,

WHEN CHIPPED LOGWOOD HAS BEEN SOME TIME EXPOSED TO THE AIR, IT LOSES A CONSIDERABLE PORTION OF ITS DYING POWER.

however, several essential circumstances which must combine to give any individual a chance of exceeding the usual period assigned to human existence. These may be comprehended under the following heads; a proper configuration of body; being born of healthy parents; living in a healthy climate and good atmosphere; having the command of a sufficient supply of food; constant exercise; a due regulation of sleep; a state of marriage; and due command of the passions and temper.

LONGIM'ETRY, the art of measuring lengths or distances, both accessible and inaccessible. A base line is measured, and the angle which the object makes with the base is taken with a theodolite at each end of the base, and we thus have one side of a triangle, and its angles to determine the other sides.

LON'GITUDE, in geography, the distance in degrees, measured in the heavens, of any place from a first meridian, as that of Greenwich, taken east or west. On the earth these degrees diminish in actual length as the pole is approached, a degree of longitude at the equator being 69·1 as a degree of latitude, but at latitude 10 being but 67·95, at 20 but 64·84, at 40 but 52·85, at 50 but 43·42, and at 60, 34·5. The British parliament, in 1714, offered a reward of 20,000*l.* for an accurate method of finding the longitude at sea, within one half of a degree; but this act was repealed in 1828. Chronometers are now made with extraordinary accuracy, and have sometimes been used for the determination of longitude upon land, as well as at sea, with great success; but, nevertheless, astronomical observations furnish the most exact methods.——*Longitude*, in astronomy, an arc of the ecliptic intercepted between the beginning of Aries and the point of the ecliptic cut by the circle of longitude belonging to any star. The longitude of a star is found by means of its right ascension and declination.——*Longitude of motion*, in mechanics, the distance or length which any moving body runs through as it moves on a right line.

LONG-PRIM'ER, the name of a printing type, somewhat larger than is generally used for a newspaper, being between bourgeois and small-pica.

LONI''CERA (the *honeysuckle*), in botany, a genus of plants of which there are 19 species. The *Lonicera grata*, or evergreen honey-suckle, is the most beautiful: it grows without any culture in North America: it has strong branches, covered with a purple bark, which are ornamented with lucid green leaves embracing the stalks, and continuing their verdure all the year. The flowers have a strong aromatic flavour; they first appear in June, and there is a constant succession of flowers till the frost puts an end to them.

LOOK'ING-GLASS, a plain glass mirror, which being impervious to the light, reflects the images of things placed before it.

LOOM, a frame of wood or metal, by which the process of weaving is performed.——The words *loom* and *looming* are also used to express what we understand by the term *mirage*. Thus when a ship, seen at a distance, appears larger than the real dimensions and indistinctly, it is said she *looms;* so, of a mountain, under similar circumstances, it is said *the land looms high.*

LOOM'-GALE, a gentle easy gale of wind, in which a ship can carry her topsails a-trip.

LOOP, in iron-works, the part of a row or block of cast iron, melted off for the forge or hammer.

LOOP'HOLES, in fortification, little holes in the walls of a castle or fortification, through which arrows were discharged.——In a ship, small apertures in the bulkhead and other parts of a merchant ship, through which small arms are fired at an enemy.

LORA'RIUS, in antiquity, one who stimulated the gladiators to continue the fight by exercising the scourge upon them. Also, a slave who bound and scourged others at his master's pleasure.

LORD, a title of courtesy given to all British and Irish noblemen, from the *baron* upwards; to the eldest sons of earls; to all the sons of marquesses and dukes; and, as an honorary title, to certain official characters; as the *lord* mayor of London, the *lord* chamberlain of the king's household, the *lord* chancellor, the *lord* chief justice, &c. *Lord* is also a general term, equivalent with *peer.*——*Lord,* in law, one who possesses a *fee* or *manor.* This is the primitive meaning of the word; and it was in right of their feofs that *lords* came to sit in parliament.——In Scripture, a name for the Supreme Being. When LORD, in the Old Testament, is printed in capitals, it is the translation of the Hebrew word for JEHOVAH, and might with great propriety be so rendered. It is also applied to Christ, to the Holy Spirit, to kings, and to prophets.

LORDS, HOUSE OF, is composed of the five orders of nobility, viz.—dukes, marquesses, earls, viscounts, and barons, who have attained the age of 21 years, and labour under no disqualification; of the 16 representative peers of Scotland; of the 28 representative peers of Ireland; of 2 English archbishops and 24 bishops, and 4 representative Irish bishops

LORD'S SUPPER, a ceremony among Christians by which they commemorate the death of Christ, and make at the same time a profession of their faith. The blessed founder of our religion instituted this rite when he took his last meal with his disciples; breaking the bread, after the oriental manner, as a fitting symbol of his body, which was soon to be broken, while the wine was significant of that blood which was about to be shed.

LORI'CA, in Roman antiquity, a cuirass, brigandine, or coat of mail, which was made of leather, and set with plates of various forms, or rings like a chain.

LORICA'RIA, in ichthyology, a genus of fishes, of the order *Abdominales*, having the head smooth and depressed, mouth retractile, and body mailed.

LORICATION, in chemistry, is the covering a glass, or earthen vessel, with a coat or crust of a matter able to resist the action of a strong fire, and sustain a high degree of heat.

LOR'IMER, in archæology, a name given formerly to those who made spurs, bits, and other articles of iron for horses.

LO'RY, in ornithology, a bird of the parrot tribe, prized for its beautiful red and yellow colours. They are docile and familiar, learn to speak with great fluency, and are marked by their tenderness and attachment to their masters.

LOTION, in medicine and pharmacy, a liquid preparation or wash for beautifying the skin. Lotions ought never to be used unless the ingredients of which they are composed are well understood, many of them being highly deleterious.

LOT'TERY, a scheme for the distribution of prizes by chance; or the distribution itself. The drawing of the first public lottery in England was on Jan. 11th, 1569; and, according to Stow, it continued incessantly drawing till the 6th of May following. This took place at the west door of St. Paul's Cathedral, and the prizes consisted of a large quantity of royal plate and trinkets, the produce of which it was stated should be converted "for the reparation of the havens and strength of the realm, and such other public good works;" but the proceeds of this *patriotic* scheme, it is believed, were notwithstanding applied to private uses. Licenses for various kinds of lotteries were occasionally from that period granted; till at length "state lotteries" became a legitimate source of revenue to the government. The temptations thus thrown in the way of both sexes, of all ages and all descriptions of persons, produced evident demoralizing effects, and many reasons were urged in parliament for their discontinuance; till at last the evils resulting from this species of gambling became so palpable, that government consented to their abolition in 1826; and it is sincerely to be hoped they may never again be tolerated.

LOTUS, in botany, a shrub, the fruit of which is a small farinaceous berry, of a delicious taste, which the natives of Africa make into a sweet cake.——In the ancient Hindoo and Egyptian mythological representations of nature, the Lotus (*nelumbium speciosum*, Lin.), an aquatic plant, was the emblem of the great generative and conceptive powers of the world, and was regarded with religious veneration.

LOUIS-D'OR, a French gold coin, which received its name from Louis XIII., who first coined it in 1631. The value of the old *Louis-d'or* was equal to 24 francs; the new *Louis* is of the value of 20 francs.

LOU'IS, St. (KNIGHTS OF) the name of a military order in France instituted by Louis XIV. in 1693.

LOUSE, in entomology, a small insect of the genus *Pediculus* It has six feet, two eyes, with long feelers, and a mouth furnished with a proboscis. Almost every species of animal is frequented by its peculiar louse, and even man is subject to their attack. Cleanliness is the best antidote to these disgusting intruders.

LOVE, an affection of the mind excited by the qualities of an object which communicate pleasure, either sensual or intellectual. The love of God is of a higher kind: it springs from just views of the attributes and excellencies of the Divine character; and combines esteem, reverence, and holy fear.

LOV'E-APPLE, the fruit of the *Solanum lycopersicum* of Linnæus. It is so much esteemed by the Portuguese and Spaniards, that it is an ingredient in almost all their soups and sauces, and is deemed cooling and nutritive.

LOW'LANDERS, a name for the descendants of the English Saxons who are in Scotland.

LOX'IA, in ornithology, the grosbeak, a genus of birds of the order *Passeres*. The *Loxia curvirostra*, or Cross-bill, is about the size of a lark. Its favourite food consists of the seeds of pine; and pine woods are always its principal haunts. It has the habits of a parrot; and in North America it builds on the highest firs, attaching its nest to the trunk by means of the exuded resin. *Loxia pyrrhula*, or the Bullfinch, is commonly known in this country, changing its residence according to the season, in summer retreating from the habitations of man, in winter preferring orchards and gardens, in which it does great mischief by destroying the buds of trees.

LOZ'ENGE, in geometry, a quadrilateral figure, having two angles acute and the two opposite ones obtuse.——In pharmacy, a medicine made to be held in the mouth, which was originally in the form of a lozenge.——In heraldry, a figure which is used to contain the coats of arms of all maidens and widows.

LUB'BER'S HOLE, in a ship, the vacant space between the head of a lower mast and the edge of the top. It is so termed from a supposition that a *lubber* (a contemptuous name for one who does not know a seaman's duty) will not like to trust himself up the futtock shrouds, but prefer that way of getting into the top.

LU'BRICATE, an epithet often used in medicine, signifying to make smooth or slippery. Thus, mucilaginous and saponaceous preparations are said to *lubricate* the parts to which they are applied.

LUCA'NUS, in entomology, a genus of insects of the order *Coleoptera*, of which there are 26 species. The principal is the *Lucanus cervus*, or stag-chafer, which is the largest of European coleopterous insects, being two or three inches long. It is chiefly found in the neighbourhood of oak trees, and its larvæ are found in the hollows of those trees, residing in the fine mould usually seen in such cavities, and feeding on the softer parts of the decayed wood.

LU'CERN, in botany, a plant of the genus *Medicago*, cultivated for fodder.

IN EGYPT, THE LOTUS WAS CONSECRATED TO ISIS AND OSIRIS, AND WAS AN EMBLEM OF THE CREATION OF THE WORLD FROM WATER.

IT WAS FORMERLY ADJUDGED, THAT THE ISSUE OF AN IDIOT WAS LEGITIMATE, AND HIS MARRIAGE VALID; BUT IT IS NOW DETERMINED OTHERWISE.

IF, AFTER A PRISONER BE TRIED AND FOUND GUILTY, HE SHOULD LOSE HIS SENSES BEFORE JUDGMENT IS PRONOUNCED, NO SENTENCE IS PASSED ON HIM.

LU'CID IN'TERVAL, in medicine, an interval in which the phrenzy of mad persons ceases, and leaves them in possession of their senses.

LU'CIFER, the morning star; called, when an evening star, *Hesperus*. Astronomy teaches us, however, that the evening and morning star are one and the same, viz. the beautiful and bright planet Venus. The name of *Lucifer* is also given to the prince of darkness.

LUCIFE'RIANS, in ecclesiastical history, the followers of Lucifer, bishop of Cagliari, in the fourth century; a sect that held to the carnal nature of the soul, and that there is no place for repentance for such as fall.

LU'CULLITE, in mineralogy, a subspecies of carbonate of lime, of three kinds.

LU'DI, in antiquity, the shows or public exhibitions which were made among the Greeks and Romans, for the display of skill and the entertainment of the people. [See GAMES.]

LUFF, or *Keep your Luff!* in navigation, an order of the helmsman to put the tiller on the lee-side, in order to make the ship sail nearer the wind. A ship is said to *spring her luff*, when she yields to the helm by sailing nearer the wind.——*Luff round!* the order to throw the ship's head up in the wind.——*Luff tackle*, a large tackle not destined for any particular place in the ship, but movable at pleasure.

LUG'GER, a vessel carrying three masts, with a running bowsprit, upon which she sets lug-sails, and sometimes has top-sails adapted to them.——*Lug-sail*, a square sail bent upon a yard that hangs obliquely to the mast at one-third of its length.

LUKE, or *Gospel of St. Luke*, a canonical book of the New Testament, distinguished for fullness, accuracy, and traces of extensive information. Some think it was properly St. Paul's gospel, and when that apostle speaks of his gospel, he means what is called St. Luke's. Irenæus says, that St. Luke digested into writing what St. Paul preached to the gentiles; and Gregory Nazianzen tells us, that St. Luke wrote with the assistance of St. Paul.

LUMACHEL'LA, or LUM'ACHEL, in mineralogy, a calcareous stone composed of shells and coral conglutinated, but so far retaining their organization as to exhibit different colours, and so hard as to admit of polish.

LUMBA'GO, in medicine, a rheumatic affection of the muscles about the loins.

LUM'BAR RE'GION, in anatomy, the posterior portion of the body between the false ribs and the upper edge of the haunch bone.

LUM'BRICAL MUS'CLES, in anatomy, certain muscles of the fingers and toes, so named from their resembling a worm.

LUMBRI'CUS, a species of worm, of various lengths, which inhabits occasionally the human intestines.

LUMP'FISH, in ichthyology, a thick fish of the genus *Cyclopterus*. The back is sharp and elevated; the belly flat, and of a crimson colour; and along the body run five rows of sharp bony tubercles. The lumpfish swims edgewise, and is enabled to adhere with great force to any substance to which it applies itself.

LU'NACY, a species of insanity or madness, supposed to be influenced by the moon, or by its position in its orbit.

LU'NAR CAUS'TIC, in chemistry, nitrate of silver fused in a low heat.

LU'NATIC, as defined by the law, is a person who is sometimes of a sound mind, and at other times not so; in which last case, he is said to be *non compos mentis*. A lunatic, while in this state, is not chargeable with any criminal act, except an attempt upon the person of the sovereign; and, therefore, where a person incites a lunatic to commit a criminal action, he is, in the eye of the law, a principal offender, and is punished in the same manner as if he committed it himself. But though a lunatic is not punishable, yet to prevent mischief, he may be confined in prison till he has recovered his senses.

LUNA'TION, in astronomy, the space of time between one new moon and another.

LUNE, or LU'NULE, in geometry, a plane in the form of a crescent or half moon, terminated by the circumference of two circles that intersect each other within.

LUNETT'E, in fortification, an enveloped counterguard, or elevation of earth made beyond the second ditch; or a covered place before the curtain, consisting of two faces that form an angle inward.——In optics, *lunettes* are glasses to help the sight.

LUNGS *(Pulmones)*, in anatomy, two viscera situated in the chest, by means of which we breathe. The substance of the lungs is of four kinds, viz. vesicular, vascular, bronchial, and parenchymatous. The vesicular substance is composed of the air-cells: the vascular invests those cells like a network: the bronchial is formed by the ramifications of the bronchia throughout the lungs, having the air-cells at their extremities; and the spongy substance that connects these parts is termed the *parenchyma*. To the touch they are soft, spongy, and elastic; and in their specific gravity they are the lightest of all the organs.

LU'NISTICE, in astronomy, the farthest point of the moon's northing and southing, in its monthly revolutions.

LU'NULAR, or LU'NULATE, in botany, resembling a small crescent; shaped like the new moon.

LUPERCA'LIA, a festival of the ancient Romans in honour of the god Pan, observed on the 15th of the calends of March, and so called from *Luperci*, the priests of that deity. This festival was instituted by Evander, who being driven from Arcadia, and received by king Faunus, introduced the worship of Pan in Italy: but the ceremonies and magnificence of this feast were increased by Romulus.

LU'PINE, in botany, a genus of leguminous plants *(lupinus)*, mostly annuals, bearing digitate leaves, and papilionaceous

flowers, which are usually disposed in a terminal raceme.

LU'PULIN, the fine yellow powder of hops. It has a penetrating aromatic odour, and when insulated, it is found to consist of little grains, which attach themselves to the fingers and render them rough.

LU'PUS, in astronomy, the Wolf, a constellation of the southern hemisphere.

LURCH'ER, a variety of the *Canis familiaris*, a dog more used by poachers than sportsmen, having a narrow body, stout legs, a straight tail, and long rough hair.

LUSTRA'TION, in antiquity a ceremony of purification which the Romans performed on their fields, armies, and people, on different occasions, but particularly after the numbering of the people by the censors every five years, or *lustrum*.

LUS'TRE, a term very generally used in modern works on mineralogy. The lustre of minerals is of five kinds: 1. *splendent*, that is, when in full day-light, the lustre can be seen at a great distance; 2. *shining*, when at a distance the reflected light is weak; 3. *glistening*, when the lustre is only observable at no greater distance than an arm's length; 4. *glimmering*, when the surface held near the eye in full day-light presents a number of shining points; 5. *dull*, when the surface has no lustre.

LU'SUS NATU'RÆ, something out of the ordinary course of nature.

LUS'TRUM, in Roman antiquity, a general muster and review of all the citizens and their goods, which was performed by the censors every fifth year, who afterwards made a solemn *lustration*. This custom was first instituted by Servius Tullius, about 180 years after the foundation of Rome. In course of time the *lustra* were not celebrated so often, for we find the fifth lustrum celebrated at Rome only in the 574th year of that city.

LUTE, a stringed instrument of music, containing at first only five rows of strings, to which were afterwards added six more. It was formerly much used. The strings are struck with the right hand, and with the left the stops are pressed.

LUTE, or LUTING, in chemistry, a composition or paste made of potter's clay, sand, and other materials, for the purpose of closing up the necks of retorts, receivers, &c. in different chemical experiments.

LUTHERANISM, the doctrines of Martin Luther, the German reformer, which form the creed of nearly all the Protestants in Germany. Luther was an Augustine friar, who separated from the church of Rome about the year 1515, and took the lead in what is now called the Reformation.

LUXA'TION, in surgery, the dislocation of a bone from its proper cavity, or articulation, so as to impede or destroy its proper motion or office.

LUX'URY, an unrestrained indulgence in the pleasures of the table, in costly dress, equipage, &c. Amongst the Romans, luxury prevailed to such a degree, that several laws were made to suppress, or at least to limit it. Apicius laid aside ninety millions of sesterces, besides an enormous revenue, for no other purpose than to be sacrificed to luxury: finding himself involved in debt, he looked over his accounts, and though he had the sum of ten million of sesterces still left, he poisoned himself for fear of being starved to death. Instances might be produced of great luxury amongst the Greeks; but the extravagance and luxury of both Greeks and Romans appear to be eclipsed by some of our own country. One instance of this kind will suffice. In the 10th year of the reign of Edward IV., (1470) George Nevill, brother to the Earl of Warwick, at his instalment into the archiepiscopal see of York, entertained most of the nobility and principal clergy, when his bill of fare was 300 quarters of wheat, 350 tuns of ale, 104 tuns of wine, a pipe of spiced wine, 80 fat oxen, 6 wild bulls, 1004 wethers, 300 hogs, 300 calves, 3000 geese, 3000 capons, 300 pigs, 100 peacocks, 200 cranes, 200 kids, 2000 chickens, 4000 pigeons, 4000 rabbits, 204 bitterns, 4000 ducks, 200 pheasants, 500 partridges, 2000 woodcocks, 400 plovers, 100 curlews, 100 quails, 1000 egrets, 200 rees, 400 bucks, does and roebucks, 1500 hot venison pasties, 4000 cold ditto, 1000 dishes of jelly parted, 4000 dishes of jelly plain, 4000 cold custards, 2000 hot custards, 300 pikes, 300 breams, 8 seals, 4 porpoises, and 400 tarts. At this feast the earl of Warwick was steward, the earl of Bedford treasurer, and Lord Hastings comptroller, with many more noble officers, 1000 servitors, 62 cooks, and 515 menial apparitors in the kitchen. But it must not escape our observation, that after his extreme prodigality this man died in the most abject, but unpitied poverty.

LYCÆ'A, in antiquity, an Arcadian festival, answering to the Lupercalia of the Romans.

LYCAN'THROPY, in medicine, a species of madness proceeding from the bite of a dog in a rabid state, which causes the patient to make a noise resembling the howling of a wolf.

LYCE'UM, in Grecian antiquity, an academy situated upon the banks of the Ilissus at Athens. It was composed of porticos and walks, where Aristotle taught philosophy; walking there constantly every day till the hour of anointing, whence he and his followers were called *peripatetics*.

LYCH'NIS, in botany, a genus of plants, class 10 *Decandria*, order 5 *Pentagynia*. The species are perennials.

LY'CIUM, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are shrubs, and consist of the different varieties of Box Thorn.

LYCOPO'DIUM, or Club Moss, a sort of moss, the seeds of which when ignited burn off like a flash of lightning. It is used in melo-dramatic pieces, &c. at the theatres.

LYCOP'SIS, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are annuals, consisting of various kinds of Bugloss.

LYD'IAN MOOD, in music, a term given to an effeminate kind of music used first by the Lydians.

LUSTRAL WATER WAS USED BY THE ANCIENTS IN THEIR CEREMONIES TO SPRINKLE AND PURIFY THE PEOPLE: HENCE, PERHAPS, HOLY WATER.

LYDIUS LAPIS, or LYDIAN STONE, in mineralogy, a stone of a grayish black colour, which is found in Bohemia and other parts of Germany, and also in Scotland. When polished, it is used as a test stone for determining the purity of gold and silver. It was used for that purpose among the ancients, by whom it received this name, because it was found only in the Tmolus, a river of Lydia.

LYMPH, in anatomy, a colourless fluid, or clear limpid humour, secreted from the blood, which is carried by the lymphatic vessels into the thoracic duct, where it mixes with the chyle. Its constituent principles appear to be albuminous water and a little salt.

LYMPHATICS, vessels which absorb the superfluous moisture of lymph in the animal system, and convey it to the chyle. With the lacteal vessels of the intestines, they form what is termed the *absorbent system*.

LYNX, in zoology, an animal of the genus *Felis*, of which there are three species. They are the size of a wild cat, and have many of that animal's habits. In Asia they are tamed for hunting, and are proverbial for the keenness of their sight.

LYRA, in astronomy, a constellation in the northern hemisphere.——In anatomy, the triangular medullary space between the posterior crura.

LYRATE, or LYRATED, in botany, an epithet for a leaf that is divided transversely into several jags, the lower ones smaller and more remote from each other than the upper ones.

LYRE (*lyra*, Lat.), a musical instrument of the stringed kind. The modern lyre, or Welsh harp, consisting of forty strings, is well known, but the structure of ancient lyres cannot be ascertained. The lyre among poets, painters and statuaries is attributed to Apollo and the Muses. It is said to have been originally formed of a tortoise-shell, whence it is sometimes called *testudo*.

LYRIC, in general, something that is sung or played on the lyre; but it is more particularly applied to the ancient odes and stanzas, answering to our airs and songs, and which may be played on instruments. *Lyric poetry* was originally employed in celebrating the praises of gods and heroes, and its characteristic was sweetness. It was much cultivated by the Greeks, particularly by Anacreon, Alcæus, and Sappho; but among the Romans, Horace was the first and principal lyric poet.

LYSSA, in medicine, that most dreadful malady, canine madness; for our observations on which, see HYDROPHOBIA.

LYTTA, in entomology, a genus of insects, order *Coleoptera*. [See CANTHARIDES.]

M.

M, the thirteenth letter of the English alphabet, is a liquid and labial consonant, pronounced by slightly striking the under lip against the upper one. It is sometimes called a semi-vowel, as the articulation or compression of the lips is accompanied with a humming sound through the nose. M. as a numeral stands for *mille*, a thousand; and with a dash over it, 1,000,000. M.A. *magister artium:* M.D. *medicinæ doctor:* MS. *manuscript*, and MSS. *manuscripts*. In the prescriptions of physicians, M. stands for *manipulus*, a handful; and sometimes for *misce*, or *mixtura*. M. also stands for *noon*, from the Latin *meridies:* hence P.M. *post meridiem* (afternoon); and A.M. *ante meridiem* (morning). M, in French, stands for *Monsieur;* MM. for *Messieurs*.

MAB, in northern mythology, the queen of the imaginary beings called fairies; so fancifully described by the sportive imagination of Shakspeare, in Romeo and Juliet.

MAC, an Irish word, signifying a son, frequently added to the beginning of surnames, as Macdonald or M'Donald, for Donaldson.

MACADAMIZING, a method of making roads, first publicly introduced by Mr. Mac Adam, which consists in breaking the stones so small that they may bind with the earth into a solid smooth mass.

MACARONI, or MACCARONI, a kind of biscuit made of flour, eggs, sugar, and almonds. Made in a more simple way, it forms a favourite article of food among the Italians. In commerce, it is known as Genoese paste, and is made into a tubular or pipe form, of the thickness of goose-quills.——A term of contempt for a fop or coxcomb.

MACARONIC, or MACARONIAN, an appellation given to a burlesque kind of poetry, made up of a jumble of words of different languages, of Latin words modernized, or of native words ending in Latin terminations.

MACAW, in ornithology, a sort of parrot, with a long tail, the *Psittacus macao* of Linnæus. It is above a yard long, lives in palm woods, and is easily tamed when young.

MACCABEES, two apocryphal books of Scripture, containing the history of Judas and his brothers, and their wars against the Syrian kings in defence of their religion and liberties. The first book is an excellent history, and comes nearest to the

THE INVENTION OF THE LYRE IS VARIOUSLY ASCRIBED, BUT IT ONLY PROVES THAT MUSIC WAS EARLY CULTIVATED IN MANY COUNTRIES.

MANY POETASTERS FOOLISHLY IMAGINE THAT EVERY EXPRESSION OF FEELING, IF IN VERSE, DESERVES THE NAME OF A "LYRIC POEM."

style of the sacred historians. The second book of the Maccabees begins with two epistles sent from the Jews of Jerusalem to the Jews of Egypt and Alexandria, to exhort them to observe the feast of the dedication of the new altar erected by Judas on his purifying the temple.

MACE, the second coat or envelop of the kernel of the nutmeg, is a thin and membranaceous substance, of an oleaginous nature and a yellowish colour; being met with in flakes of an inch and more in length, which are divided into a multitude of ramifications. It is extremely fragrant, and of an aromatic and agreeable flavour. ——*Mace*, an ornamented staff, borne as an ensign of honour before a magistrate. Originally the mace was a club or instrument of war, made of iron, and much used by cavalry.

MACERA'TION, in chemistry, the process of obtaining the virtues of bodies, by soaking them in fluids. It differs from *digestion* only as the latter operation admits the application of heat.

MACHIAVELISM, the principles inculcated by Machiavelli, an Italian writer, secretary and historiographer to the republic of Florence. Hence the word *Machiavelian* denotes political cunning and artifice, intended to favour arbitrary power.

MACHICOLA'TION, in ancient warfare, the pouring of hot substances through apertures in the upper part of the castle gate upon assailants.

MACHI'NE, an engine or artificial work, simple or complicated, composed of several parts, put together by mechanical art and contrivance, for the purpose of raising bodies, assisting, regulating, or stopping their motions, &c. The simple machines comprehend the six mechanical powers. Compound machines are composed of two or more of these powers for the production of motion or force. Machines are likewise distinguished according to the purposes for which they are used, as the architectural machine, electrical machine, hydraulic machine, printing machine, &c.——The utility of *machinery*, in its application to manufactures, consists in the addition which it makes to human power, the economy of time, and the conversion of substances apparently worthless into valuable products. In the history of every science, we find the improvements of its machinery to constitute an important part. All machines are intended either to produce power, or merely to transmit power and execute work. Of the class of mechanical agents by which motion is transmitted,—the lever, the pulley, the wedge,—it has been demonstrated that no power is gained by their use, however combined. Whatever force is applied at one part, can only be exerted at some other, diminished by friction and other incidental causes; and whatever is gained in rapidity of execution, is compensated by the necessity of exerting additional force. These two principles should be constantly borne in mind, and teach us to limit our attempts to things which are possible. Among the extraordinary powers of machinery are some which human power, unaided by machinery, could never effect. For instance, the same power which twists the stoutest cable, and weaves the coarsest canvas, may be employed, with equal advantage, in spinning the gossamer thread of the cotton, and entwining, with fairy fingers, the meshes of the most delicate fabric.

MACK'EREL, *(schomber)*, in ichthyology, a tribe of well-known migratory fishes, esteemed as an article of food, and possessing, when alive, great symmetry of form and brilliancy of colours. The mackerel is easily taken, by a variety of baits, and the capture always succeeds best during a gentle breeze of wind, which is hence termed a mackerel-breeze or mackerel-gale. [See FISHERIES.]

MAC'LE, in mineralogy, a name given to chiastolite or hollow spar.

MAC'LURITE, a mineral of a brilliant pale green colour.

MAC'ROCOSM, the universe, or the visible system of worlds; opposed to *microcosm*, or the world of man.

MACROSCEL'IDES. This curious insectivorous mammal, which inhabits the rocky mountains of the western part of the district of Algiers, has been recently observed by M. Wagner. It inhabits the crevices of rocks, and makes its bed in the underwood of the dwarf palm; it eats the larvæ of insects, grasshoppers, and terrestrial mollusca, introducing its rostrum into the snail shells before the animal has time to retreat. It is remarkably gentle, only expressing uneasiness by a low sound, something like a sigh. It raises itself on its hind legs when it hears any sudden noise, and also leaps upon its prey, but never walks solely on two legs like the Jerboa. It disappears in the rainy season, and during the great heat.—*Athenæum*.

MAC'ULÆ, dark spots appearing on the luminous faces of the sun, moon, and even some of the planets. They were first discovered by Galileo, soon after he had invented his telescope. It has been supposed that these spots adhere to, or float upon the surface of the sun, because, 1. Many of them are observed to break near the middle of the sun's disc, others to decay and vanish there, or at some distance from his limb. 2. Their apparent velocities are always greatest over the middle of the disc, and gradually slower from thence on each side towards the limb. 3. The shape of the spots varies according to their position on the several parts of the disc; those which are round and broad in the middle grow oblong and slender as they approach the limb, as they ought by the rules of optics. By means of these spots the diurnal revolutions of the sun and planets have been discovered.—The spots, or maculæ, observable on the moon's surface, seem to be only cavities or large caverns on which the sun shining very obliquely, and touching only their upper edge with his light, the deeper places remain without light; but as

WHAT IS GENERALLY UNDERSTOOD BY MACHIAVELISM, IS THAT UNSCRUPULOUS POLICY WHICH MAKES USE OF ANY MEANS TO ATTAIN AN OBJECT.

THOUGH MADDER CONTAINS A BEAUTIFUL AND FAST COLOUR, IT REQUIRES MANY PRECARIOUS AND DIFFICULT OPERATIONS TO FIX IT.

THE MODE OF THE INCREASE, REPRODUCTION, AND DEATH OF MADREPORES, HAS NEVER BEEN PROPERLY ASCERTAINED BY NATURALISTS.

the sun rises higher upon them, they receive more light, and the shadow, or dark parts, grow smaller and shorter, till the sun comes at last to shine directly upon them, and then the whole cavity will be illustrated: but the dark, dusky spots, which continue always the same, are supposed to proceed from a kind of matter or soil which reflects less light than that of the other regions.——*Maculæ*, in medicine, any discolorations in the surface of the body, or its different parts, which appear in the form of spots. They are differently denominated according to the colour, part affected, &c.; as *maculæ albæ*, white spots on the eye; *maculæ latæ*, the shingles; *maculæ volaticæ*, flying eruptions, &c.

MAD'DER, the root of the *Rubia tinctorum*, or dyer's madder, to whom it is a most important article, on account of the fine scarlet colour it affords: indeed, it is so essential to dyers and calico printers, that their manufactures could scarcely be carried on without it. The madder-root grows in France and other countries of Europe: that of Zealand is the best of European growth, but that which comes from the Levant is still more esteemed. The root is perennial, long, creeping, about as large as a quill, and red within and without; from it arise several trailing, quadrangular stems, rough, branching, and two or three feet in length; leaves are oblong-oval; the flowers yellow and small, making their appearance in June and July, and are succeeeded by blackish berries. In the middle part of the root, which contains the finest colouring matter, there may be distinguished, by the microscope, a great many red particles dispersed among the fibres, which constitute the rich dyeing material. The root is also used in medicine.

MAD'NESS, a dreadful kind of delirium, without fever, in which the patient raves or is furious. Melancholy and madness may very justly be considered as diseases nearly allied; for they have both the same origin, that is, an excessive congestion of blood in the brain: they only differ in degree, and with respect to the time of appearing; melancholy being the primary disease, of which madness is the augmentation. Both these disorders indicate a weakness of the brain, which may proceed from an hereditary disposition; from violent disorders of the mind, especially long continued grief, sadness, anxiety, dread, and terror; from close study and intense application of mind to one subject; from narcotic and stupefying medicines; and from great excess or uncurbed indulgence in any passion or emotion. The treatment of madness is partly corporeal, partly mental. The leading indications under the first head are: to diminish vascular or nervous excitement when excessive, as in mania; to decrease them when defective, as in melancholia. In the mental treatment, it is necessary to inspire the unhappy victims with a certain degree of awe from a conviction of superior power, and at the same time, seek to gain their confidence by steadiness and humanity, while we endeavour to amuse them without making our design apparent.

MAD'RIGAL, in the Italian, Spanish, and French poetry, is a short, amorous poem, composed of a number of free and unequal verses, neither confined to the regularity of the sonnet, or to the subtilty of the epigram, but containing some tender and delicate thought, suitably expressed.

MAD'REPORE, a submarine substance of a stony hardness, resembling coral. It consists of carbonate of lime with some animal matter; is of a white colour, wrinkled on the surface, and full of cavities or cells, inhabited by a small animal. From a liquor discharged by this animal, the substance is said to be formed. Madrepores constitute a genus of polypi, of variable forms, always garnished with radiated plates.

MAD'REPORITE, a variety of limestone, so called on account of its occurring in radiated prismatic concretions resembling the stars of madrepores. Also a name given to certain petrified bones found in Normandy, belonging to a cetaceous fish or to a species of crocodile; but which have none of the properties of madrepore.

MÆSTO'SO, in music, an Italian word signifying *majestic*, and used as a direction to play the part with force and grandeur.

MAGAZI'NE, in commerce, a warehouse for all sorts of merchandise.——In military affairs, a storehouse for arms, ammunition, or provisions.——In literature, a periodical work containing miscellaneous matter. The earliest publication of this kind in England, was the *Gentleman's Magazine*, which first appeared in 1731, and which still exists as a most respectable and valuable monthly repertory of literature.

MAGELLAN'IC CLOUDS, in astronomy, three whitish clouds, or appearances resembling clouds, near the south pole, which revolve like the stars. They take their name from Magellan the navigator; and it is possible they may be multitudes of stars, like the milky way.

MAGGIO'RE, in music, an Italian epithet signifying *greater*.

MAG'GOT, the larva of the common blow-fly, hatched from the eggs in a few hours. On its changing to a pupa, the skin dries round it, and in ten days the fly emerges.

MA'GI, or MA'GIANS, an ancient religious sect in Persia, and other eastern countries, who maintained that there were two principles, the one the cause of all good, the other the cause of all evil; and, abominating the adoration of images, worshipped God only by fire, which they looked upon as the brightest and most glorious symbol of the Deity. This religion was reformed by Zoroaster, who maintained that there was one supreme independent being; and under him two principles or angels, one the angel of goodness and light, and the other of evil and darkness. The priests of the *Magi* were the most skilful mathematicians and philosophers of the ages in which they lived, insomuch that a learned

man and a magician became synonymous terms.

MA″GIC, properly signifies the doctrine of the Magi; but the Magi being supposed to have acquired their extraordinary skill from familiar spirits or other supernatural information, the word *magic* acquired the signification it now bears, viz. a science which teaches to perform wonderful and surprising acts, by the application of certain means, which procure the assistance and interposition of demons. The *magicians* of antiquity were generally acquainted with certain secret powers, properties and affinities of bodies, and were hence enabled to produce surprising effects, to astonish the vulgar; and these surprising effects, produced by natural causes, procured them credit in their pretensions to supernatural and miraculous power.—Astrology, divination, enchantments and witchcraft, were parts of this fanciful science; which, from being truly respectable once, as having had for its object mathematics and natural philosophy, by these means became contemptible, its professors opprobrious, its productions ridiculous, and its illusions mere juggler's tricks.——*Natural magic*, the application of natural philosophy to the production of surprising but yet natural effects.

MAGIC LANTERN, an optical machine, invented by Kircher, by means of which are represented on an opposite wall in a dark room monstrous figures, magnified to any size at pleasure. This contrivance consists of a common lantern with a candle in it, to which is added a tube, and one lens to throw the light on the object, and another lens to magnify the image on the wall.

MAGIC SQUARE, in arithmetic, a square figure formed by a series of numbers in mathematical proportion, so disposed in parallel and equal ranks, that the sums of each row, taken either perpendicularly, horizontally, or diagonally, are equal.

MA″GISTRATE, any public civil officer to whom the executive power of the law is committed, either wholly or in part.

MAG′MA, the generic name of any crude mixture of mineral or organic matters, in a thin pasty state.

MAG′NA CHARTA LIBERTA′TUM, generally known as Magna Charta, the Great Charter of Liberties, obtained by the English barons from king John, in 1215. The barons consisted of the whole nobility of England; their followers comprehended all the yeomanry and free peasantry, and the accession of the capital was a pledge of the adherence of the citizens and burgesses. John had been obliged to yield to this general union, and conferences were opened, on the plain called Runneymede, on the banks of the Thames, near Staines, in sight of the forces of each. At length the preliminaries being agreed on, the barons presented heads of their grievances and means of redress; and the king directed that the articles should be reduced to the form of a charter, in which state it issued as a royal grant. To secure the execution of this charter, John was compelled to surrender the city and Tower of London, to be temporarily held by the barons, and consented that the barons should choose twenty-five of their number, to be guardians of the liberties of the kingdom, with power, in case of any breach of the charter, or denial of redress, to make war on the king, to seize his castle and lands, and to distress and annoy him in every possible way till justice was done. Many parts of the charter were pointed against the abuses of the power of the king as lord paramount; the tyrannical exercise of the forest laws was checked, and many grievances incident to feudal tenures were mitigated or abolished. But besides these provisions, it contains many for the benefit of the people at large, and a few maxims of just government, applicable to all places and times.

MAGNANIER *(French)*, the name given in the southern departments of France to the proprietor of a nursery in which silkworms are reared upon an extensive scale, or to the manager of the establishment.

MAGNE′SIA, in chemistry, one of the primitive earths, having a metallic basis called *magnesium*. It exists in abundance in combination with other substances, but has never been found perfectly pure in nature. It is an ingredient in many fossils; and several of the salts, which it forms in combination with the acids, are found in mineral springs, and in the water of the ocean. From these combinations, magnesia is obtained by different artificial processes.—Take one part of Epsom salt and let it be dissolved in twenty parts of water: the solution is to be filtered, and to this is to be added, while hot, a solution of pure potash or soda, as long as precipitation is produced. The alkali combines with the sulphuric acid, and the magnesia is separated, and falls down in white powder. It is then washed in water till the liquor comes off tasteless.—This earth exists under the form of a white powder: it is much used in medicine as a very gentle laxative, and as an absorbent to destroy acidity in the stomach.—Epsom salt is compounded of sulphuric acid and magnesia, the chemical name is of course the *sulphate of magnesia*.—The *carbonate of magnesia*, or magnesia compounded with carbonic-acid-gas, is a very important compound.

MAGNE′SIAN LI′MESTONE, in geology, carbonate of lime associated with carbonate of magnesia. The lime resulting from the calcination of magnesian limestone is said to have an injurious action on vegetation, unless applied in quantities considerably less than common lime, when it is found to fertilize the soil.

MAG′NESITE, in mineralogy, magnesia combined with silex. It occurs in amorphous masses, or in masses tuberous and spongiform; its colour is yellowish gray, or white with spots, and dendritic delineations of blackish brown. It forms an excellent and beautiful mortar cement for terraces.

MAG′NET, or LOAD′STONE *(magnes)*,

THE ONLY WAY IN WHICH MAGNESIA IS EMPLOYED IN THE ARTS, IS FOR THE PURIFICATION OF FINE OIL, IN THE PREPARATION OF VARNISH.

in natural history, a very rich iron ore, found in large detached masses, of a dusky iron-gray, often tinged with a brownish or reddish hue, and when broken appearing something like the common emery, but less sparkling. It is very heavy, tolerably hard, of a perfectly irregular and uneven surface, and of a firm structure, but usually with some porous irregularities within. It is found in all places where there are iron mines. The primary properties of the loadstone are the following: 1. Every loadstone has two points, called poles, which emit the magnetic virtue. 2. One of these poles attracts, the other repels iron, but no other body. 3. This virtue, being the third species of attraction, is communicated to iron very copiously by the touch, which renders it strongly magnetic. 4. A piece of iron so touched by the loadstone, and nicely suspended on a sharp point, will be determined to settle itself in a direction nearly north and south. 5. The end of the needle touched by the south pole of the load, will point northwards; and the contrary. 6. Needles touched by it, will dip below the horizon, or be directed on the touched part to a point within the earth's surface: this is called the dipping needle. 7. This virtue may also be communicated to iron by a strong attrition all one way. 8. Iron-rods or bars acquire a magnetic virtue by standing long in one position. 9. Fire totally destroys this virtue, by making the stone or iron red-hot. 10. This power is exerted sensibly to the distance of several feet. 11. It is sensibly continued through the substance of several contiguous bodies or pieces of iron. 12. It pervades the pores of the hardest body; and equally attracts the iron in vacuo as in open air. These and many more are the properties of a body, not more wonderful than useful to mankind.——There being two distinct kinds of action in magnetical bodies, scientific men have considered that there are two distinct species of magnetic fluid, the particles of the one fluid having the property of attracting the particles of the other; but when the particles are separate, they repel; each repels the particles of its own kind, &c.——The most simple magnetical instrument is the *horizontal needle*. This needle consists of a bar of hardened steel magnetized. The bar is made of various forms, being commonly rectangular, but having a broad portion in the centre. There is a hole made in the middle of the broad portion, which is tapped with a screw, to receive an exterior screw turned upon a brass cap, into which is fitted a piece of agate, on which the needle is balanced upon a steel point. It is then suspended in a box made of brass or wood. Below the needle a circular card is placed, whose circumference is divided into degrees or minutes, or more commonly into thirty-two equal parts, called points. The axis of the needle passes through the centre of the card. The four cardinal points are marked on the card; and the intermediate divisions are, for the purpose of very nice observations, laid off in degrees and minutes; and, should great delicacy be required, the needle is made to carry a vernier. When the apparatus is used for land surveying or astronomical purposes, the box is furnished with sights. When the compass is used for observations at sea, the card is also suspended upon a point, and the box in which it is contained is hung upon gimbals; the whole forming a sort of universal joint, in order that the needle and card may retain the horizontal position, independent of the heaving of the ship.

MAG'NETISM, that branch of science which treats of the property of attracting and repelling iron, as the loadstone does. It was partially known to the ancients, but it does not appear that they knew anything of its directive power, which has been so usefully employed by the moderns. [See the previous article.]——*Terrestrial Magnetism.* "Professor Gauss, of Gottingen, received from the Royal Society, a Copley medal, for his recent improvements in the methods of making Magnetic Observations, and for his theoretical investigations relative to Terrestrial Magnetism. By the use of heavy needles, if the word may be applied to magnetical bars from one to twenty-five pounds in weight; by a multitude of ingenious and delicate applications of principles more or less well-known in the abstract, but never before brought into combination; and, above all, by a profound and powerful mathematical analysis, embracing the subject of terrestrial magnetism in a general point of view, and furnishing resources before unimagined for estimating its effects in the various phases of inclination (or dip), declination (or variation), and intensity,—Professor Gauss has given to magnetic determinations the precision of astronomical observation, and, in fact, may almost be said to have created anew this important department of science. One very extraordinary fact has already resulted from this system of observation, carried on (in pursuance of a suggestion of Humboldt) by a great many observers in correspondence with each other, viz., that the magnetism of the earth is a state of continual and restless fluctuation—as much so as the waves of the sea, or the pressure of the air; but that its changes from *moment to moment* are strictly simultaneous at every point where observations of this nature have yet been made, embracing (now) the whole extent of Europe, from Upsal in Sweden, to Catania in Sicily, and from St. Petersburgh to Dublin! so that even the difference in longitude of these distant stations might be obtained from magnetic observations." It is a remarkable circumstance, says Major Sabine, that at the commencement of the present century, there was not a single published observation to attest the existence of any difference whatsoever in the intensity of the magnetic force at different parts of the earth.—Sir John Herschel, in eulogizing Major Sabine's report on the magnetic survey of Great Britain, at a late meeting of the British Association, observed, that he would not

pretend to anticipate the importance of the results, but he saw an epoch fast approaching when Terrestrial Magnetism would take its place among the strictest of the mathematical sciences; he could not but believe, that the day was near when, perhaps, it would rank second only to astronomy, and when its details would be as well understood as the doctrine of the pendulum, and its dynamics studied as those of any other branch of physics. Some of the late determinations of Gauss were truly sublime. He has just ascertained that the variation is subject to small oscillations, which take place simultaneously everywhere over the whole of Europe, and probably, over the earth, so that the cause of this appears to be communicated in an instant from the east to the west.——*Animal Magnetism*, a sympathy supposed to exist between the magnet and the human body. The origin of the term was a fancied analogy between the action of the mineral magnet and that of the animal energy, or *vis vitæ*, to which these effects were attributed: but subsequent experience has convinced most people that the effects of what is termed animal magnetism may be ascribed to a heated imagination, to an excitement, half spiritual, half sensual, and to a morbid sensitiveness. It originated thus: A German physician, named Anthony Mesmer, in 1772, attempted cures with the mineral magnet, and excited some sensation in Vienna, but at length declared, that not the magnet, but a mysterious power in his own person caused the effects ascribed to the magnet, and that this power was related not only to the magnetic power, but to the attraction dispersed throughout the universe. From Vienna he went to Paris, where he gained a number of proselytes, and eventually obtained 340,000 livres for revealing the principles of his pretended discovery. The government at length appointed a committee of physicians, and members of the academy of sciences, among whom was Dr. Franklin, to investigate the pretensions of Mesmer, and the result of their inquiries appeared in an admirable memoir, drawn up by M. Bailly, which completely exposed the futility of animal magnetism, and the quackery of its author.

MAGNIFICO, the title given by courtesy to a nobleman of Venice.

MAG'NIFYING POWER, in optics, the enlargement of the angle under which an object can be seen, effected in telescopes and microscopes by producing an image of the object, and then viewing the image, by another glass, very close, thereby enlarging the angle, and of course magnifying the object.

MAG'NITUDE, whatever is made up of parts locally extended, or that has several dimensions; as a line, surface, solid, &c. The apparent magnitude of a body is that measured by the visual angle, formed by rays drawn from its extremes to the centre of the eye; so that whatever things are seen under the same or equal angles, appear equal; and, *vice versâ*.

MAGNO'LIA, the Laurel-leaved Tulip-tree, in botany, a genus of plants, class 13 *Polyandria*, order 7 *Polygamia:* the corolla of which consists of nine oblong, hollow, and obtuse petals, narrowest towards the base. The *Magnolia grandiflora*, or the great magnolia, is the principal species. It is a native of Florida, and is remarkable for its large evergreen leaves and white flowers, which are conspicuous at a great distance. Two others of the species also deserve particular notice. One is the *Magnolia macrophylla*, the leaves of which are between two and three feet long, and the flowers upwards of a foot in diameter. The petals are from six to nine in number, and the three exterior ones have a purple spot at the base. It grows in the south-western parts of the Alleghanies. The other is the *Magnolia glauca*, or beaver-wood, a beautiful shrub, with leaves and flowers much smaller than any of the rest of the genus. The flowers are very elegant, and diffuse a delightful fragrance; the leaves and wood have also a strong aromatic taste.

MAG'PIE, in ornithology, a well-known chattering bird, of the genus *Corvus*, resembling in its habits and manners the other birds of the crow kind. It has a black bill, wings, and tail; but the latter are variegated with white, green, purple, and blue, of different shades. When taken young, they readily become domesticated, and learn to repeat many words and sentences, as well as to imitate every noise within hearing.

MAHOG'ANY, the wood of a tree of the genus *Swietena*, growing in America and the West Indies. Our most beautiful and durable articles of cabinet furniture are made of this wood, which is of a reddish brown colour, and susceptible of a fine polish. The trunk of this majestic tree is often 40 feet in length, and 6 feet in diameter; and it divides into so many massy arms, and throws the shade of its shining green leaves over so vast an extent of surface, that few more magnificent objects are to be met with in the vegetable world. The principal importations into Great Britain are made from Honduras and Campeachy. "Not long since," observes Mr. M'Culloch, "Messrs. Broadwood, the distinguished pianoforte makers, gave the enormous sum of 3000*l.* for three logs of mahogany! These logs, the produce of a *single tree*, were each about 15 feet long and 38 inches square: they were cut into veneers of 8 to an inch. The wood was particularly beautiful, capable of receiving the highest polish; and when polished, reflecting the light in the most varied manner, like the surface of a crystal; and, from the wavy form of the pores, offering a different figure in whatever direction it was viewed."

MAHOM'ETANS, or MOHAM'MEDANS, believers in the doctrines and divine mission of Mahomet, the warrior and prophet of Arabia, whose creed maintains that there is but one God, and that Mahomet is his prophet, and teaches ceremonies

IT IS ASSERTED THAT PATIENTS WHO ARE TREATED BY THE SAME MAGNETIZER HAVE AN OBVIOUS INCLINATION FOR EACH OTHER.

COMPLETE COATS OF MAIL CONTINUED TO BE USED THROUGH THE SEVENTEENTH CENTURY, AND AT THE BEGINNING OF THE EIGHTEENTH.

by prayer, with washings, &c. almsgiving, fasting, sobriety, pilgrimage to Mecca, &c. Besides these they have some negative precepts and institutions of the Koran, in which several things are prohibited, as usury, the drinking of wine, all games that depend upon chance, the eating of blood and swine's flesh, and whatever dies of itself, is strangled, or is killed by a blow or by another beast. These doctrines and practices Mahomet established by the sword, by preaching, and by the alcoran or koran, which contains the principles of his religion; and he and his followers met with such success, as in a few years to subdue half the known world. [See ALCORAN.]

MAI'DEN, an instrument formerly used in Scotland for beheading criminals. It consists of a broad piece of iron about a foot square, very sharp on the lower part, and loaded above with lead. At the time of execution it was pulled up to the top of a frame, about ten feet high, with a groove on each side for the maiden to slide in. The prisoner's neck being fastened to a bar underneath, and the sign given, the maiden was let loose, and the head instantly severed from the body. It was the prototype of the French guillotine.——*Maiden Assize*, an assize in which no person is condemned to die.

MA''JESTY, a title given commonly to kings. It was first used in England in the reign of Henry VIII. instead of "*highness.*"

MAI'HEM, or MAY'HEM, in law, a wound or hurt, by which a man loses the use of any member. It originally applied to such corporeal injuries as rendered a man less fit for war.

MAIL, a coat of steel net-work, formerly worn for defending the body against swords, lances, &c. The mail was of two sorts, chain and plate mail; the former consisting of iron rings, each having four others inserted into it; the latter consisting of a number of small plates of metal, laid over one another like the scales of a fish, and sewed down to a strong linen or leathern jacket.——In ships, a square machine composed of rings interwoven, like net-work, used for rubbing off the loose hemp on lines and white cordage.——*Mail*, or *Mail-bag*, a leathern bag for the conveyance of letters.——*Mail-coach*, a coach of a particular construction for expeditious travelling, several of which are employed by government for the conveyance of letters to all parts of England. Mail-coaches were first brought into use in 1784; and the speed at which they travelled, when compared with other public conveyances, excited almost as much wonder in those bygone times, as railway travelling does now. If we may judge by present appearances, these compact, elegant, and well-appointed vehicles will not much longer be needed; nay, it requires no great stretch of the imagination to presume, that the time is not far distant when a mail-coachman may be regarded as a *lusus naturæ*, and his great coat and whip be placed among the curiosities in the British Museum, as relics of an age when science was scarcely in its leading-strings!

MAILED, in heraldry, a term for speckled, as the feathers of hawks, partridges, &c.

MAIN, in military and naval affairs, a word prefixed to many words, and signifying *principal;* as the *main-guard*, *main-mast*, *mainsail*, &c.

MAIN'PRIZE, in law, the receiving a person into friendly custody who might otherwise be committed to prison, on security given for his forthcoming on a day appointed.

MAIN'TENANCE, in law, is an unlawful maintaining or supporting a suit between others, by stirring up quarrels, or interfering in a cause in which the person has no concern. Thus if any person disinterested in a cause officiously gives evidence, without being called upon for that purpose, or acts the part of counsel by speaking in the cause, or retains an attorney for the party, he is guilty of maintenance, and is liable to be prosecuted by indictment. But it is no maintenance, where a person gives a poor man money out of charity to carry on a suit.

MA'JOR, the title of several military officers, as major-general, major of a brigade, major of a regiment, &c.——*Major*, in logic, the first proposition of a regular syllogism, containing the principal term.—— In music, an epithet applied to the modes in which the third is four semitones above the key-note, and to intervals consisting of four semitones. *Major* and *minor* are applied to concords which differ from each other by a semitone.

MAIZE, or INDIAN CORN, a plant of the genus *Zea*, the native corn of America. The root is fibrous; the stems rise to the height of from four to ten feet; and like other grasses (for it belongs to the natural family *gramineæ*) they are furnished with knots at intervals. The styles are very numerous, six to eight inches long, and hang down like a silken tassel from the extremity of the foliaceous envelope; the seeds or grains are rounded externally, angular and compressed at the sides, and tapering towards the base, and are disposed in several longitudinal series. Maize is now very extensively cultivated, not only in America, but throughout a great part of Asia and Africa, as also in several countries in the south of Europe. In many of the provinces of France it forms almost exclusively the sustenance of the inhabitants. The spikes or ears are gathered by hand, and the husks, when perfectly dry, stript off, and, together with the stalks, laid by for winter fodder, while the ears are conveyed to the granary. Next to wheat, it is considered the most nutritious grain.

MAL'ACHITE, in mineralogy, the green carbonate of copper, found frequently crystallized in long slender needles. It consists of copper, carbonic acid, oxygen, and water It takes a good polish, and is often manufactured into toys.

MAL'ACOLITE, in mineralogy, another

ONE EAR OF MAIZE CONTAINS ABOUT 600 GRAINS, SET CLOSE TOGETHER IN ROWS, TO THE NUMBER OF EIGHT OR TEN.

name for *diopside*, a mineral found in the silver mines of Sweden, and also in Norway, consisting of silica, lime, alumina, oxyde of iron, &c.

MALACOPTERY'GIOUS, in ichthyology, an appellation given to one of the five orders of fishes, from their having the rays of their fins bony, but not pointed or sharp at the extremities, like those of acanthopterygious fishes.

MALACOSTOMOUS, an epithet for those fishes destitute of teeth in the jaws, vulgarly called leather-mouthed; as the tench, carp, bream, &c.

MALADMINISTRA'TION, bad management of public affairs, or a misdemeanour in public employments, particularly of executive and ministerial duties, prescribed by law.

MAL'AGA, a species of wine imported from Malaga, in Spain.

MAL'ATES, in chemistry, salts formed by the union of the malic acid with different bases. The malates of potash, soda, and ammonia are deliquescent.

MALA'RIA, (Italian *mal' aria*, bad air) a state of the atmosphere, or soil, or both, which, in certain regions in the warm season, produces a fever more or less violent according to the nature of the exposure. The country of the *mal' aria*, in Italy, extends from Leghorn to Terracina, about 200 miles, and from the sea to the Appenines, from 25 to 30 miles. The city of Rome has been gradually invaded by it; so that not only the whole of ancient Rome has been deserted, but even the finest parts of the modern city have become unsafe.——It has been found from observation, that although it is commonly supposed that standing waters, when clear and free from smell, and all running waters, are perfectly salubrious, they may, in fact, be nearly as injurious as those that are putrid and stagnant; and that, besides proper marshes, fresh and salt meadows, and wet pasture lands generally, all woods, coppices, thickets, rivers, lakes, ponds, ornamental waters, pools, ditches, plashy and limited spots of ground generally, send forth more or less of this noxious vapour; that wherever, in short, any chemical compound of the vegetable elements is wetted, or held in solution by water, there the poison in question may be, or will be, produced, provided the temperature be sufficiently high; that the smallest spot coming under any of the above denominations is sufficient to produce malaria, and a single inspiration of that malaria to produce disease.

MALE FLOWER *(flos masculus)*, in botany, a flower that bears stamens only, without pistils.

MALE SCREW, in mechanics, a screw that has the spiral thread on the outside of the cylinder.

MA'LIC ACID, in chemistry, an acid procured from the juices of many fruits, but particularly from that of apples. It is composed of oxygen, hydrogen, and carbon, and combines with alkalies, earths, and metallic oxydes so as to form malates.——Malic acid has no smell, but a very sour taste; and affords by distillation a peculiar acid, called *pyromalic*.

MA'LIS, in medicine, a disease of the skin, produced by an insect lodging underneath.

MALLEABIL'ITY, the ductile property of metals, whereby they are capable of extension by the hammer, and of being worked into forms. It is opposed to *brittleness*.

MAL'LEUS, in anatomy, a bone of the ear, so called from its resemblance to a mallet, and in which is observed the head, the neck and handle, which is joined to the membrane of the tympanum.

MAL'LOW, an herbaceous plant, of the genus *Malva*, most species of which grow wild in the field. The common mallow is an annual; but there are several species which are perennials and biennials.

MALM'SEY, the name of a species of grape, and also of a luscious kind of wine.

MALT, the name given to barley when prepared by a particular process, so as to fit it for making into beer, ale, and porter; which are denominated *malt liquors*. The processes of *malting* have for their objects, first, to excite the vegetative powers of the grain, and, then, to stop vegetation. Thus, by the aid of moisture, the barley is made to germinate, that is, to put forth roots, and almost its acrospire, or first sprout; and by the aid of fire, the roots are destroyed, and the acrospire prevented from bursting the skin. By germination, all the principles of the grain are put in motion. The heat which it subsequently undergoes separates its parts, and the viscidity which it before possessed, is removed by the looser texture of its oils, and their intimate union with the salts; which alteration is the cause of the sweetish taste that distinguishes malt from barley.——*Malt kilns* are chambers full of holes in the floor, through which the heat ascends from the furnace below and dries the barley that is laid upon it.

MALTHA, a variety of bitumen, viscid and tenacious, like pitch; unctuous to the touch, and exhaling a bituminous odour.

MA'LUM IN SE, in law, an offence at common law, in distinction from *malum prohibitum*; such as playing at unlawful games, &c., which are only *mala prohibita* under certain circumstances.

MA'LUM MORTUUM, in medicine, a malignant species of leprosy, or *scabies*, so called because it makes the body, as it were, black and livid.

MAL'VA, in botany, a genus of plants, class 16 *Monadelphia*, order 8 *Polyandria*. The species are mostly annuals, consisting of the various kinds of mallows.

MALVEI'SA, in archæology, a warlike engine that was used to batter down walls.

MALVERSA'TION, in law, misbehaviour in an office, employ, or commission, as breach of trust, extortion, &c.

MAM'ALUKES, or MAM'ELUKES, the name of a dynasty that reigned in Egypt, and who for many years composed the military force of Egypt. They were originally Turkish or Circassian slaves, who being

METALS MAY BE SAID TO BE MALLEABLE IN PROPORTION TO THE DEGREE OR MATTER OF HEAT WHICH THEY CONTAIN IN A LATENT STATE.

instructed in the military exercises, soon exhibited a spirit of insubordination; assassinated the sultan Turan Shah, and, in 1254, appointed Ibegh, one of their own number, sultan of Egypt. They were at length conquered by Selim I., and Cairo, their capital, taken by storm, in 1517. During the French invasion of Egypt by Buonaparte, the Mamelukes formed a fine body of cavalry, and for a time seriously annoyed the invaders, though many afterwards joined them. Mohammed Ali, the pacha of Egypt, annihilated their power, by destroying the beys, in 1811, by a stratagem.

MAMMA'LIA, in the Linnæan system of zoology, the first class of animals, comprehending such as *suckle* their young: the term being derived from *mammæ*, breasts. This class is divided into seven orders:—— 1: *Primates*, animals that have two canine teeth, and four cutting teeth. Of this order there are only three genera; man, the monkey, and the bat. 2: *Bruta*, animals that have no cutting teeth; as the elephant. 3: *Feræ*, animals that have from two to ten cutting teeth; as, the lion. 4: *Glires*, animals that have only two cutting teeth, and no canine teeth; as, the hare. 5: *Pecudes*, animals that have no cutting teeth in the upper jaw; as, the sheep. 6: *Belluæ*, animals with cutting teeth in each jaw, and which are furnished with hoofs; as, the horse. 7: *Cetæ*, the whale species.——From man, who, from his most perfect organization, stands at the head of the system, to whales and their congeners, which are classed at the end of the mammalia, the skeleton is formed upon the same general principles, and its parts are only altered or modified to suit the station which the animal is destined to fill. We have followed the classification of Linnæus, as the most simple; but we are bound to notice that Cuvier, Lamarck, and other naturalists, who adopted the Linnæan method as far as it went, have considered it necessary, in consequence of the accumulation of new objects which daily presented themselves, to institute many new genera in every department of zoology. It would, however, lead us far beyond our prescribed limits, were we to follow the extensive classification adhered to by Cuvier; but we will conclude by a quotation illustrative of the principles upon which he grounds his theory: "Every organized being," says he, "forms a whole and entire system, of which all the parts mutually correspond and co-operate to produce the same definite action, by a reciprocal re-action; none of these parts can change, without a change of the others also. Thus, if the intestines of an animal are organized in a manner only to digest fresh flesh, it is necessary that his jaws should be constructed to devour the prey, his claws to seize and tear it, his teeth to divide the flesh, and the whole system of his organs of motion to follow and overtake it, and of his organs of sense to perceive it at a distance. It is necessary, also, that he should have seated in his brain the instinct to hide himself and spread snares for his victim; such are the general conditions of a carnivorous regimen; they must infallibly be united in every carnivorous animal—without them the species could not subsist. But under these general conditions, there are particular ones with respect to the size of the species, and the abode of the prey for which each animal is disposed."

MAMMEE-TREE *(Mammea Americana)*, in botany, a large and beautiful tree, sometimes called the West Indian Apricot, the fruit of which is highly esteemed for its sweet and very agreeable taste, accompanied with an aromatic, pleasant odour. The leaves are oval, six or eight inches in length; the flowers white, an inch and a half in diameter, and diffuse a delightful perfume; and the tree attains the height of sixty or seventy feet.

MAM'MOTH, a species of extinct elephant, found in a fossil state, but entirely distinct from the existing species of Asia and Africa. The bones have been occasionally found in all parts of Europe, Asia, and America, and have given rise to stories of giants. A mammoth, in complete preservation, was seen by Adams, a traveller in Siberia, who found the skeleton to be nine feet and a half high, and fourteen long: the tusks were nine feet long. It is very different from the *mastodon*, a gigantic fossil animal of North America.

MAM'MON, in the *Syriac* language, signifies riches. It is used *Matth.* vi. 24, and *Luke* xvi. 13, and is there called the *mammon* of unrighteousness, intimating that riches are frequently the instruments of iniquity, or acquired by unrighteous means.

MAM'MAL, or MAM'MIFER, in zoology, an animal which has breasts for suckling its young.

MAMMA'RIA, in entomology, a genus of animals of the class *Vermes*, order *Mollusca*, having a smooth body, without cirri or rays.

MAM'MILARY, pertaining to the breasts. Also, an epithet applied to two small protuberances, like nipples, found under the fore ventricles of the brain, and to a process of the temporal bone.

MAN (*homo*), in zoology, is justly ranked at the head of the animal part of the creation; making a distinct genus of that order of quadrupeds, which Linnæus calls *anthropomorpha*, from their resemblance to the human form. Setting aside his divine reason and his immortal nature, Man, in the language of naturalists, is a being provided with two hands, designed for prehension, and having fingers protected by flat nails; and two feet, with single soles, destined for walking; with a single stomach, and three kinds of teeth,—incisive, canine, and molar. His position is upright; his food both vegetable and animal; his body naked. It has been made a subject of dispute whether there is more than one species of the human race; but it is merely a dispute of words; and if the term *species* is used in its common scientific sense, it cannot be denied that there is but one species. There are, however, certain and constant differences of stature, physiognomy, colour, nature of

the hair, or form of the skull, which have given rise to subdivisions of this species. The most natural and best defined classification is that of Blumenbach, who divides mankind into five varieties. 1: The first variety occupies the central parts of the old Continent, namely, Western Asia, Eastern and Northern Africa, Hindostan, and Europe. Its characters are the colour of the skin, more or less white or brown; the cheeks tinged with red; long hair, either brown or fair; the head almost spherical; the face oval and narrow; the features moderately marked, the nose slightly arched; the mouth small; the front teeth placed perpendicularly in the jaws; the chin full and round. This is called the *Caucasian*, from its supposed origin in the Caucasus. 2: The second variety has been termed the *Eastern*. The colour in this race is yellow; the hair black, stiff, straight, and rather thin; the head almost square; the face large, flat, and depressed; the features indistinctly marked; the nose small and flat; the cheeks round and prominent; the chin pointed, the eyes small. This variety comprises the Asiatics to the east of the Ganges and of mount Beloor, except the Malays: it includes the Turks, Egyptians, Persians, Hindoos, the Tartars, Chinese, &c. 3: The *American* variety resembles the last described in several points. Its principal characters are the copper colour; stiff, thin, straight, black hair; low forehead; eyes sunk; the nose somewhat projecting; cheek-bones prominent; face large. This variety comprises all the Americans except the Esquimaux. 4: The fourth variety is called by Blumenbach the *Malay*, and described as of a tawny colour; the hair black, soft, thick, and curled; the forehead a little projecting; the nose thick, wide, and flattened; the mouth large; the upper jaw projecting. This variety comprehends the islanders of the Pacific Ocean. 5: The remaining variety is the Negro. Its characters are, colour black; hair black and woolly, head narrow; forehead convex and arched; cheek-bones projecting; nose large, and almost confounded with the upper jaw; the upper front teeth obliquely placed; the lips thick; the chin drawn in; the legs crooked. This race is found in Western and Southern Africa, and the great islands of the Pacific, generally in the interior. There are very great differences in the tribes included in this variety; witness the Negro, with the complexion of jet, and wool; the Caffre, with a copper complexion, and long hair; the sooty Papous, or New Guineaman; the native of Van Dieman's Land; and the Hottentots.——Man is the only animal which possesses, in the same degree, flexible powers of speech, by which he is enabled to communicate his thoughts; and this has led, in different tribes, to the invention of several hundred languages. He is, also, the only animal which possesses the muscles of laughter; and he enjoys, above all others, the nicest powers of reasoning by analogy, from his past experience; and, by the perfection of his hands, is enabled to appropriate most things to his wants. Man is also distinguishable by the originality of his ideas. *Instincts* make up a part of his character; but he is principally the creature of experience and reflection; he builds a habitation, because he has experienced the inclemency of the weather, and because he has reflected upon the means of securing himself against its rage. When he builds, too, it is not like the work of the bee or the beaver, upon any instinctive plan, and that plan the best possible for the purpose, but one in which he presently discovers imperfections; and from which that of another individual of the same species is totally different.——We have elsewhere, under various separate heads, while treating of the subjects, spoken of man in a religious, moral, and intellectual point of view. We shall therefore add nothing to the sketch we have here given.

MAN, an epithet applied to a ship, as a *man-of-war*, a *merchantman*, &c. Also, to "*man* a prize"; to "*man* the topsail sheets;" to "*man* the yards," &c., signifying, to supply either of these with the men necessary for the required purpose.

MAN'AKIN (*Pipra*), in ornithology, the name of a beautiful race of birds found in South America. They are generally small, and inhabit the depths of forests. The largest of them, the *Pipra Militaris*, is distinguished by a beautiful crest of red feathers on its head.

MANA'TI, or MANA'TUS, in zoology, the sea-cow, or fish-tailed walrus, an animal of the genus *Trichechus*, which sometimes grows, it is said, to the enormous length of 23 feet. Of this animal there are two varieties, the *australis* or *lamentin*, and *borealis* or *whale-tailed manati*. It has fore-feet palmated, and furnished with claws, but the hind part ends in a tail like that of a fish. The skin is of a dark colour, the eyes small, and instead of teeth, the mouth is furnished with hard bones, extending the whole length of the jaws. It never leaves the water, but frequents the mouths of rivers, feeding on grass that grows in the water.

MANCHINEEL', in botany, a tree of the genus *Hippomane*, growing in the West Indies to the size of a large oak, and abounding in a milky, acrid juice, of a poisonous quality. The fruit, which is about the size of a small apple, causes inflammation in the mouth and throat, with pains in the stomach. The wood is valuable for cabinet work.

MANDA'MUS, in law, a writ issued from a court of law, and directed to any person, corporation, or inferior court, commanding the performance of some special thing.

MANDARIN', the magistrates and governors of provinces in China, who are chosen out of the most learned men, and whose government is always at a great distance from the place of their birth.

MAN'DIBLE, in ornithology, the upper and under bill of birds. Also, in anatomy, another name for the jaw. [See MAXILLA.]

MAN'DRAKE (*Mandragora*), in botany, a plant of the genus *Atropa*; the corolla of

AT ABOUT THE AGE OF THIRTY-FIVE, A FAT MAN VERY OFTEN BECOMES THINNER, AND ONE WHO IS LEAN GENERALLY BECOMES FATTER.

THE ANIMATE AND INANIMATE POWER OF GREAT BRITAIN, APPLIED TO MANUFACTURES AND COMMERCE, IS TREBLE THAT OF FRANCE.

which consists of a single erect hollow petal, growing gradually wider from the base; being a little larger than the cup, and divided beyond the middle into five lanceolated segments; the fruit is a great globose berry, containing two cells; the receptacle is fleshy and convex on both sides; the seeds are numerous and kidney-shaped. The mandrake has been esteemed a poison by many; but by others it is declared innocent: the bark of the root was once used as a narcotic; but at present the leaves are only used in medicine. The ancients called mandrakes the apples of love, and Venus had the name of *Mandragoritis*. In consequence of a fancied resemblance of the root to the human form, they attributed to it miraculous powers, and endowed it with many properties, as absurd as they were unfounded.

MAN'DREL, a kind of wooden pulley, forming part of a turner's lathe.

MAN'DRIL, in zoology, a species of monkey.——*Mandril*, in mechanics, a kind of iron spindle, with a screw.

MAN'DUCI, in antiquity, hideous figures introduced at the public representations of the Romans, which served as bugbears.

MAN'EGE, the art of breaking in and riding horses, or the place set apart for equestrian exercises. [See HORSE and HORSEMANSHIP.]

MA'NES, in the pagan system of theology, a general name for the infernal deities. The ancients comprehended under the term *manes* not only Pluto, Prosperine, and Minos, but the souls of the deceased were likewise included. It was usual to erect altars and offer libations to the *manes* of deceased friends and relations, for the superstitious notion that the spirits of the departed had an important influence on the good or bad fortune of the living, made people very cautious of offending them. When it was not known whether a corpse had been buried or not, a cenotaph was erected, and the manes were solemnly invited to rest there, from fear that otherwise they would wander about the world, terrifying the living, and seeking the body which they had once inhabited.

MAN'GANESE, in mineralogy, an ore which, when pure, is of a grayish white colour, and of considerable brilliancy; it has neither taste nor smell, is of the hardness of iron, very brittle, and when reduced to powder, it is attracted by the magnet. The ore of manganese is remarkable for its spontaneous inflammation with oil. From its infusibility, it does not combine readily with many metals, but shows considerable affinity to iron, occurring frequently combined with it in nature, and being supposed to improve the quality of steel. Manganese is applied to no use in its metallic form. Its attraction of oxygen is so rapid, that exposure to the air is sufficient to render it red, brown, black, and friable, in a very short time; it can therefore be only kept under water, oil, or ardent spirit. It is the most combustible of all the metals. It decomposes water by means of heat very rapidly, as well as the greater part of the metallic oxydes. It decomposes sulphuric acid: it is soluble in nitric acid; it is fusible with earths, and colours them brown, violet, or red, according to its state of oxydizement. It frees from colour glasses tinged with iron, and is therefore used in glass-making: it is also used to give a black colour to earthenware.

MANGANE'SIATE, in chemistry, a compound of manganesic acid with a base.

MAN'GEL-WUR'ZEL, in botany, a plant of the beet kind, much used as food for cattle, and valuable from its size and hardy nature.

MAN'GO, in botany, the fruit of a tree, native of the East-Indies, but now growing in most of the tropical regions. The tree is allied to the sumach, attains the height of 30 or 40 feet, and is highly productive. The fruit is kidney-shaped, of a most delicious flavour, and containing a flattened stone. More than eighty varieties of Mango are cultivated, some of which are very beautiful, and diffuse a delightful perfume.

MANGOSTEEN', in botany, a tree of the East-Indies, of the genus *Garcinia*, the fruit of which is shaped like, and about the size of a small orange, being of exquisite flavour, and particularly wholesome. The tree is elegant in its appearance, and grows to the height of about eighteen feet.

MAN'GROVE *(Rhizophora)*, in botany, a genus of plants, consisting of trees or shrubs, which grow in tropical countries along the borders of the sea. Their branches are long, hang down towards the earth, and, when they have reached it, take root and produce new trunks. In this manner, immense and almost impenetrable forests are formed, which are filled with vast numbers of crabs, aquatic birds, mosquitos, &c. The seeds are remarkable for throwing out roots, which vegetate among the branches of the trees, while yet adhering to the foot-stalk. The soft part of the white mangrove is formed into ropes: the wood of the red mangrove is compact and heavy.

MA'NIOC (the Indian name of the *Jatropha manihot*), a shrub (the root of which is highly nutritious) indigenous to tropical America, and cultivated also in many parts of Asia and Africa. It grows rapidly, produces abundantly, and accommodates itself to almost every kind of soil. Every part of the plant is filled with a milky juice, which is a very violent and dangerous poison; and it may well excite surprise that human ingenuity should have converted the roots into an article of food. For this purpose the roots were formerly rasped with rough pieces of stone; but they are now ground in wooden mills, and the paste is put into sacks which are exposed for several hours to the action of a heavy press. By this means it is deprived of all the poisonous juice, and the residue is called *cassava*. The substance we call *tapioca* is also produced from the manioc root.

MANICHEES', in church history, a sect of Christian heretics in the third century, the followers of Manes, who made his appearance in the reign of the emperor Pro-

HOWEVER INGENIOUS OR INDUSTRIOUS A NATION MAY BE, ITS MANUFACTURING PROSPERITY WILL FIND ITS LIMITS THROUGH CEASELESS COMPETITION.

bus; pretending to be the Comforter whom our Saviour promised to send into the world. He taught that there are two principles, or gods, coeternal and independent of each other; the first principle, or *light*, the author of all good: the second principle, or *darkness*, the author of all evil—a doctrine which he borrowed from the Persian magi.

MANIPULA'TION, a word signifying work done with the hands. It is used in pharmacy for the preparation of drugs; in chemistry, for the preparation of substances for experiments; and in animal magnetism, for the motion of the hands, by which the operator magnetizes his dupes.

MANIP'ULUS, in Roman antiquity, a body of infantry, consisting of two hundred men, and constituting the third part of a cohort.——Among physicians, the term *manipulus* signifies a handful of herbs or leaves, or so much as a man can grasp in his hand at once; which quantity is frequently denoted by the abbreviature M, or m.

MAN'NA, a miraculous kind of food which fell from heaven for the support of the Israelites in the wilderness, for the space of forty years.——*Manna*, in botany, a sweet juice or gum which flows from many trees and plants in Syria, and also in Calabria, where it exudes from two species of the ash. Its smell is strong, and its taste rather nauseously sweet. It is dissolved by water, and affords by distillation water, acid, oil, and ammonia. It is frequently employed in the *materia medica*, and forms a considerable article of commerce.

MANOM'ETER, or MAN'OSCOPE, an instrument to show or measure the alterations in the rarity or density of the air. The manometer differs from the barometer in this, that the latter only serves to measure the weight of the atmosphere, or of the column of air over it; but the former the density of the air in which it is found.

MAN'OR, an ancient royalty or lordship, formerly called a barony, consisting of demesnes, services, and a court-baron; and comprehending in it messuages, lands, meadow, pasture, wood, rents, an advowson, &c. It may contain one or more villages, or hamlets, or only a great part of a village, &c. In these days, a *manor* rather signifies the jurisdiction and royalty incorporeal, than the land or site; for a man may have a manor in gross, as the law terms it, that is, the right and interest of a court-baron, with the perquisites thereto belonging. There are capital manors or honours, that have other manors under them: and also customary manors granted by copy of court-roll, the lords of which have power to hold courts, and grant copies, &c. This was the origin of copyhold estates, viz. those held by copy of the roll of the court of the manor.

MAN'SLAUGHTER, in law, the unlawful killing a man without malice prepense. It differs from murder, in not being maliciously or deliberately done; and from excusable homicide, being done in some unlawful act, whereas excusable homicide happens in consequence of some misadventure.

MAN'TELET, in fortification, a kind of movable parapet, or wooden penthouse, used in a siege. Mantelets are cased with tin and set on wheels, so as to be driven before the pioneers, to protect them from the enemy's small shot.

MAN'TIS, in entomology, a sort of insect, of which there are numerous species, distinguished by the difference and singularity of their shape. The chief species in Europe is the camel cricket, or *praying* mantis, so called because when sitting it holds up its two fore-legs as if in the attitude of prayer; whence vulgar superstition has held it as a sacred insect; and a popular notion has prevailed, that a child or a traveller having lost his way, would be safely directed, by observing the quarter to which the animal pointed, when taken into the hand. The dry leaf mantis *(phyllium siccifolia)*, in its shape and colour is remarkable, invariably suggesting the idea of a dry and withered leaf. Their manners, also, in addition to their structure, assist in the delusion; as they often remain on trees for hours, without motion; then, suddenly springing into the air, they appear to be blown about as dry leaves. The mantis is of a predacious disposition, living on smaller insects, which it watches for with great anxiety: it is also quarrelsome, and when kept with others of its own species in a state of captivity, they will attack each other with the utmost violence, till one is destroyed.

MANT'LING, in heraldry, that appearance of folding of cloth, flourishing, or drapery, that is drawn about the coat of arms. It is supposed originally to have been the representation of a mantle, or military habit, worn by the cavaliers over their armour, to preserve it from rust.

MAN'UAL EX'ERCISE, in the military art, the exercise by which soldiers are taught the use of their muskets and other arms.

MAN'UFACTURE, the operation of reducing raw materials of any kind into a form suitable for use, either by the hands or machinery. Also any commodity made by the hand, or anything formed from the raw materials or natural productions of a country, as cloths from wool, and cotton or silk goods from the cotton and silk, &c.

MANUFAC'TURER, one who works up a natural product into an artificial commodity; or the person who employs workmen and machinery for that purpose.

MANUMIS'SION, among the Romans, the solemn ceremony by which a slave was emancipated, or liberated from personal bondage

MANU'RE, any matter or substance, either vegetable, animal, or mineral, introduced with the soil, to accelerate vegetation, and increase the produce of crops; as the contents of stables and farm-yards, marl, ashes, lime, fish, salt, &c.

MAN'USCRIPTS, writings of any kind,

IN SOME PARTS OF INDIA A SPECIES OF MANTIS IS KEPT, LIKE GAME COCKS, FOR FIGHTING, WHICH THEY DO WITH GREAT FEROCITY.

on paper, parchment, or any other material. There are many modes by which antiquarians are enabled to discover the probable date of a manuscript; and there are many which have at the end a statement when and by whom they were written, though this is not always to be relied on. Since we have had the evidence of the Herculaneum manuscripts, we can determine with certainty that none of our manuscripts are older than the Christian era. It was the custom, in the middle ages, wholly to obliterate and erase writings on parchment, for the purpose of writing on the materials anew. These *codices rescripti*, *rasi*, are thought great curiosities. In the 14th century, when paper came more into use, this custom was discontinued.——*Illuminated Manuscripts*, such as are adorned with paintings illustrating the text, or in which the initial letters are decorated with flourishes or gilding.

MAP, a delineation of a country, according to a scale, in which the proportion, shape, and position of places are exactly preserved. The top is usually the north, and the right hand the east, and, when otherwise, distinguished by a *fleur de lis* pointing to the north. It is called a *universal* map when it represents the whole surface of the earth, or the two hemispheres; and a *particular* map when it only represents particular regions or countries. A *map* is properly a representation of land, as distinguished from a *chart*, which only represents the sea or sea-coast. In maps, three things are essentially requisite: 1, that all places have the same situation and distance from the great circles therein, as on the globe, to show their parallels, longitudes, zones, climates, and other celestial appearances; 2, that their magnitudes be proportionable to their real magnitudes on the globe; 3, that all places have the same situation, bearing, and distance, as on the earth itself. The degrees of longitude are always numbered at top and bottom, and the degrees of latitude on the east and west sides.

MA'PLE, in botany, a tree of which there are numerous species, under the scientific name *acer*. The *acer saccharinum*, or sugar-maple, in North America, is one of the most remarkable species, from which, by tapping the trees early in the spring, the Americans procure a vast quantity of sugar, a tree of an ordinary size yielding in a good season from twenty to thirty gallons of sap. The wood of the common European maple is much used by turners, and on account of its lightness is frequently employed for musical instruments, particularly for violins.

MAPPA'RIUS, in Roman antiquity, the officer who gave the signal to the gladiators to begin fighting, which he did by throwing a handkerchief, that he had received from the emperor or other magistrate.

MARANATH'A, amongst the Jews, was a form of threatening, cursing, or anathematizing, and was looked upon as the most severe denunciation they had. The word is said to signify *the Lord comes, or is come:* which, taken as a curse or threat, may be thus paraphrased, "the Lord come quickly to take vengeance on thee for thy crimes," the indicative mood being used for the optative. St. Paul uses the expression, 1 Cor. xvi. 22, pronouncing *anathema maranatha* on all that love not the Lord Jesus Christ.

MARAN'TA, in botany, a genus of plants, class 1 *Monandria*, order 1 *Monogynia*. The species are perennials, and among them is the *maranta arundinacea*, or Indian Arrow-root.

MARAS'MUS, in medicine, an atrophy or consumption; a wasting of flesh without fever or apparent disease.

MAR'BLE, in natural history, a genus of fossils; being bright and beautiful stones, composed of small separate concretions, moderately hard, not giving fire with steel, fermenting with and soluble in acid menstrua, and calcining in a slight fire. *Marble* is, in fact, the popular name of any species of calcareous stone or mineral, of a compact texture, and of a beautiful appearance, susceptible of a good polish. The varieties are numerous and greatly diversified in colour. It is much used for statues, busts, pillars, chimney-pieces, monuments, &c.

MAR'CASITE, a name (in scientific nomenclature now obsolete) which has been given to all sorts of minerals, to ores, pyrites, and semi-metals.

MARCH, the third month of the year, according to the calendar of Numa and Julius Cæsar; but in the calendar of Romulus it stood first, in honour of his reputed father, Mars. This month seems to have a strong claim to the first place in the series, because in March the sun enters into the sign Aries, which is reckoned the first sign of the zodiac.——*March*, in military affairs, the movement of a body of troops from one place to another; or the measured and regular pace of a soldier, according to a certain form and time.——In music, any piece adapted to a soldier's march.

MARCHES, borders or confines, particularly the boundaries between England and Wales. The office of the "lords marchers" was originally to guard the frontiers.

MARCO'SIANS, a sect of Christian heretics in the second century, so called from their leader Marcus, who represented the Deity as consisting not of a trinity, but a quaternity, *viz.* the Ineffable, Silence, the Father, and Truth.

MAR'GARATE, in chemistry, a compound of margaric acid with a base.

MARGAR'IC, in chemistry, an epithet for an acid which appears in the form of pearly scales, and is obtained by digesting soap made of hog's lard and potash, in water. It is also called *margarine*.

MAR'GODE, in mineralogy, a bluish gray stone resembling clay in external appearance, but so hard as to cut spars and zeolites.

MARGRA'VIATE, the territory or jurisdiction of a *margrave*, originally a lord or

keeper of the marches or borders, but now a title of nobility in Germany, &c.

MAR'IGOLD, in botany, a plant of the genus *Calendula*, bearing a yellow flower. There are several plants of different genera bearing this name; as the *African marigold*, of the genus Tagetes; *corn marigold*, of the genus Chrysanthemum; *marsh marigold*, of the genus Caltha, &c.

MARI'NE, pertaining to the sea, as marine productions, &c. Also a general name for the navy of a kingdom or state, comprehending likewise all that relates to naval affairs, as the building, rigging, arming, equipping, navigating, and employing ships.

MARINE REMAINS', the shells of sea-fish, found on digging below the earth's surface, in nearly all situations and countries, and in some in solid beds of great depth, and covering very extensive tracts. In truth, many naturalists have supposed that rocks of phosphate and carbonate of lime are composed entirely of their remains. They are found at various depths with intervening land remains, generally in three strata, one above the other, serving to prove that the bed of the sea had been at three distinct remote times in those positions, and for long periods. The species of remains thus discovered are of animals which either do not exist at present, or are only found in remote seas.

MARI'NES, soldiers raised for naval service, and trained to fight either on shipboard, or in an action on land.

MARK, or *the Gospel of* St. Mark, a canonical book of the New Testament, the second in order. St. Mark wrote his gospel at Rome, where he accompanied St. Peter, in the year of Christ 44. Tertullian, and others, pretend that St. Mark was no more than an amanuensis to St. Peter, who dictated this gospel to him; others assert that he wrote it after St. Peter's death. Nor are the learned less divided as to the language this gospel was written in; some affirming it to have been in Greek, and others in Latin. It however seems plainly intended for Christian converts from paganism, and is distinguished from the other evangelical writings by its brevity, passing over much that relates to the character of Christ as Messiah. ——*Mark*, a money of account, or a coin. The English mark is two-thirds of a pound sterling, or 13*s.* 4*d.*

MARL, a species of calcareous earth, being a mixture of carbonate of lime and clay, used in agriculture for enriching barren land, and valuable according to the proportion of lime which it contains. All solid marls crumble by exposure to the atmosphere, usually in the course of a year. Like clay, it belongs both to secondary and alluvial earths, where it occurs in masses or in beds; hence it is found associated with compact limestone, or with sand and clay. It contains various organic remains, as shells, fish, bones of birds and of quadrupeds, and sometimes vegetables.

MAR'LINES, a sea term for lines of untwisted hemp well tarred, to keep the ends of the ropes, &c. from unravelling.——*Marline-spike*, a small iron spike, used to open the bolt rope when the sail is to be sewed to it, &c.

MAR'MALADE, the pulp of quinces boiled into a consistence with sugar; or a confection of plums, apricots, quinces, &c. boiled with sugar.

MAR'MALITE, a mineral of a metallic or pearly lustre: a hydrate of magnesia.

MAR'MOSE, in zoology, an animal resembling the opossum, but smaller. Instead of a bag, the marmose has two longitudinal folds near the thighs, which serve to inclose their young.

MAR'MOT, in zoology, a quadruped of the genus *Arctomys*, allied to the murine or rat tribe. It is about the size of a rabbit, and inhabits the higher region of the Alps and Pyrenees. When these animals (which live in societies) are eating, they post a sentinel, who gives a shrill whistle on the approach of any danger, and they all retire into their burrows, which are well lined with moss and hay. In these retreats they remain, in a torpid state, from the autumn till April. There are several other species of the genus, and among them is the *woodchuck* or *ground hog*, and the *wistonwish* or *prairie dog*, of North America.

MAROONS', the name given to revolted negroes in the West Indies and in some parts of South America. In many cases, by taking to the forests and mountains, they have rendered themselves formidable to the colonies, and sustained a long and brave resistance to the white population.

MARQUE, *letter of*, a power granted by a state to its subjects, to make reprisals on the subjects of a state with whom it is at war.

MAR'QUIS, or MAR'QUESS, a title of honour, next in dignity to that of duke, first given to those who commanded the marches, or borders and frontiers of a kingdom. Marquisses were not known in England till Richard II. in the year 1337, created Robert de Vere marquis of Dublin. The formal title given to a marquis in writing, is "most noble, most honourable, and potent prince." The marquis's coronet is a circle of gold set round with four strawberry leaves, and as many pearls on pyramidal points of equal height alternate.

MAR'RIAGE, a contract both of a civil and religious nature, between a man and a woman, by which they engage to live in mutual love and fidelity till death shall separate them—a bond of connexion which was instituted by God himself for the purpose of preventing the promiscuous intercourse of the sexes, for promoting domestic felicity, and for securing the maintenance and education of children. The Jews looked upon the words "be fruitful and multiply," as containing an indispensable injunction to enter into this state; and the man, whose daughter was not married before the age of twenty, was looked upon as accessary to any irregularities she might be guilty of. In almost all nations, the day of marriage is celebrated with religious ceremonies; and surely nothing is more natural than to pray

THE EXISTENCE OF MARL MAY GENERALLY BE DETERMINED BY ITS FALLING INTO POWDER, WHEN DRIED, AFTER EXPOSURE TO MOIST AIR.

MARSHES ARE FATAL TO HEALTH IN HOT COUNTRIES, OWING TO THEIR FERMENTING, AND EVOLVING A GREAT QUANTITY OF PUTRID MATTER.

for the blessing of Heaven on such a union. With the most ancient inhabitants of the East, the bride was obtained by presents made, or services rendered, to her parents; and to this day the same practice prevails among the Circassians, and the poorer Turks and Chinese.——Both men and women, among the Athenians, cut off their hair before marriage, and consecrated it to some god or goddess, under whose protection they had more immediately placed themselves; and all virgins, before they could enter upon that state, were consecrated to Diana. Previous to the actual marriage of the parties contracted, sacrifices were offered up, and the gall of the victim was always thrown behind the altar, intimating that anger and malice should have no admission. Among the Romans there was no particular age determined for marriage, but all espousals were to be consummated by the nuptials within two years. The man always, at the time of entering into contract, sent a plain iron ring to the woman, as a pledge of affection. The ancient Christian church laid several restraints upon her members in relation to marriage; such was the rule forbidding Christians to marry with infidels and heathens: another restraint related to the consanguinity and affinity prohibited in Scripture: a third was, that children under age should not marry without the consent of their parents, guardians, or next relations: and another was, that there should be some parity of condition between the contracting parties.——In conclusion, we must notice, that according to a recent act of parliament, the holy rite of marriage has in this country been made a mere civil contract.

MARS, in astronomy, one of the superior planets, moving round the sun in an orbit between those of the earth and Jupiter. Mars appears to move from west to east round the earth, his periodical motion round the sun is in 687 days nearly. His apparent motion is very unequal, and he moves about his axis in little more than one of our days and nights.

MARSH, a tract of low land, usually or occasionally covered with water, or very wet and miry, and overgrown with coarse grass and sedges. Land occasionally overflowed by the tides, is called a *salt marsh*.

MAR'SHAL, in its primary signification, means an officer who has the command or care of horses; but it is now applied to officers who have very different employments. ——*Marshal of the King's [Queen's] Bench*, an officer who has the custody of that prison in Southwark. This officer is obliged to give his attendance, and to take into custody all persons committed by that court. ——*Marshal of the Exchequer*, an officer to whom that court commits the king's debtors.——*Field-marshal*, a military officer of the highest rank.——*Earl marshal*, the eighth officer of state: an honorary title, and personal, until made hereditary by Charles II. in the family of Howard.——In the United States of America, a *marshal* is a civil officer, appointed by the president and senate, in each judicial district; answering to the sheriff of a county in England.

MAR'SHALLING, in heraldry, is the arranging of several coats of arms belonging to distinct families, in one escutcheon or shield, together with their ornaments, &c. Also the disposing of persons at public solemnities in their proper places.

MAR'SHALSEA, a prison in Southwark. A court originally instituted to hear and determine causes between the servants of the king's household and others within the verge of the court, that is, within twelve miles round Whitehall.

MARSUPRA'LIS, in anatomy, a muscle of the thigh so named from the doubling of its tendons, which resemble a purse.

MARTEL'LO TOW'ERS, a number of towers erected on an open part of the Kentish coast, at intervals of about a quarter of a mile, as a defence against the threatened invasion of France in the palmy days of Buonaparte. They are circular, with very thick walls, and bomb-proof roofs. One traversing gun was mounted on each, in working which the men were secured by a lofty parapet. They derived their name (though corrupted) from *Mortella*, in Corsica, where a strong tower maintained a determined resistance to the English force in 1794. These towers have since served as stations for the use of the coast blockade force.

MAR'TEN, in zoology, an animal of the genus *Mustela*, or weasel tribe; one of the prettiest of the beasts of prey which is found in Great Britain. It has a small head, an agile body, and lively eyes. These animals are very destructive to poultry, eggs, &c.; they also feed on rats, mice, moles, and sometimes on grain. The pine marten *(mustela martis)* inhabits the woods of North America, and is much esteemed for its fur, which is used for trimmings. About 100,000 skins of the animal are said to be annually collected in the fur countries.

MAR'TIN, in ornithology, a bird of the genus *Hirundo*, which forms its nest in buildings.

MAR'TINETS, in a ship, small lines fastened to the leech of a sail, reeved through a block on the top-mast head, and coming down by the mast to the deck. Their use is to bring the leech of the sail close to the yard to be furled.——In military language, a *martinet* signifies a strict disciplinarian.

MAR'TINGALE, in the manege, a thong of leather fastened at one end of the girths under the belly of the horse, and at the other end to the musrole, passing between the fore legs.——Also, a sea term for a rope extending from the jib-boom to the end of the bumkin.

MART'LETS, in heraldry, little birds represented without feet, and used as a difference or mark of distinction for younger brothers; to put them in mind (as it has been rather quaintly said) that they are to trust to the wings of virtue and merit, in order to raise themselves, and not to their

MARTINS BUILD THEIR NESTS IN SUCH AN ASPECT AS WILL BE SECURE FROM THE SUN, LEST ITS HEAT SHOULD CRACK OR DESTROY THEM.

feet, they having little land to set their foot on.

MAR'TYR, any innocent person who suffers death in defence of a cause, rather than abandon it. In the Christian sense of the word, it is one who lays down his life for the Gospel, or suffers death for the sake of his religion. The Christian church has abounded in martyrs, and history is filled with surprising accounts of their singular constancy and fortitude under the most cruel torments human nature was capable of suffering. The primitive Christians believed that the martyrs enjoyed very singular privileges: that upon their death they were immediately admitted to the beatific vision, while other souls waited for the completion of their happiness till the day of judgment; and that God would grant chiefly to their prayers the hastening of his kingdom, and shortening the times of persecution. The festivals of the martyrs are of very ancient date, and may be carried back at least till the time of Polycarp, who suffered martyrdom about the year of Christ 168. On these days the Christians met at the graves of the martyrs, and offered prayers and thanksgivings to God for the examples they had afforded them: they celebrated the eucharist, and gave alms to the poor; which, together with a panegyrical oration or sermon, and reading the acts of the martyrs, were the spiritual exercises of these anniversaries.

MARTYROL'OGY, a catalogue or list of martyrs, including the history of their lives and sufferings.

MA'SONRY, that branch of the building art which consists in hewing or squaring stones, &c., and of properly laying them.

MA'SONS, or FREE AND ACCEPTED MASONS, a term applied to a fraternity of great antiquity, and so called probably because the first founders of that society were persons of that craft or occupation. It is generally understood that they are bound by an oath of secrecy not to reveal any thing that passes within the society, and the members throughout the whole world are known to each other by certain secret signs. Like any other society founded on general principles, and, at the same time, well organized, it has at particular times been subservient to the production of much good, and at others of much evil, according to the different purposes for which it has been employed; and, like every other society of any magnitude, it has been the object of hyperbolical encomium from its friends, and obloquy from its enemies. It professes to be founded on the practice of social and moral virtue, and inculcates "brotherly love, relief, and truth."

MASQUE, a theatrical drama, or gorgeous histrionic spectacle, much in favour of the courts of princes, during the 16th and 17th centuries. According to Holinshed's Chronicle, the first masque performed in England was in 1510, in the first year of Henry VIIIth's reign. Shakspeare, as well as Beaumont and Fletcher, have frequently introduced masques into their plays. James I. carried the glory of the masque to its height. It had before consisted of music, dancing, gaming, a banquet, and a display of grotesque personages and fantastic dresses; but it now assumed a higher character, and became "married to immortal verse." Previously, "their chief aim," says Warton, "seems to have been to surprise by the ridiculous and exaggerated oddity of the visors, and the singularity and splendour of the dresses."——In architecture, certain pieces of sculpture representing hideous forms, which serve to fill up vacant spaces.

MASQUERA'DE, an exhibition in which persons, wearing masks, meet together, and represent different characters.

MASS, in the church of Rome, the prayers and ceremonies used at the celebration of the eucharist; or, in other words, consecrating the bread and wine into the body and blood of Christ, and offering them, so transubstantiated, as an expiatory sacrifice for the quick and the dead. As the mass is believed to be a representation of the passion of our blessed Saviour, so every action of the priest, and every particular part of the service, is supposed to allude to the particular circumstances of his passion and death. The general division of masses consists in high and low; *high mass* is sung by the choristers, and celebrated with the assistance of a deacon and sub-deacon; *low masses* are those in which the prayers are barely rehearsed without singing. There are a great number of different or occasional masses in the Romish church, many of which have nothing peculiar but the name: such are the masses of the saints, &c.——*Mass priest*, the name for priests who are kept in chantries or at particular altars, to say so many masses for the souls of the deceased.

MAS'SACRE, the indiscriminate slaughter of human beings, without authority or necessity, and without forms civil or military.

MAS'SETER, in anatomy, a muscle which has its origin in the lower and interior part of the *jugum*, and its end at the external superficies of the angle of the jaw.

MAS'SIVE, in mineralogy, having a crystaline structure, but not a regular form. ——Among builders, *massive* is an epithet given to whatever is particularly heavy and solid: thus a massive column is one too short and thick for the order whose capital it bears, &c.

MASSO'RA, or MASO'RA, a critical work amongst the Jews, containing remarks on the verses, words, letters, and vowel points of the Hebrew text of the Bible. The Jewish rabbis or doctors who drew it up, were called *Massorites*. Before that time the sacred books had no breaks or divisions into chapters or verses; and in consequence of the errors which had crept in during the Babylonish captivity, it was found necessary to ascertain and fix the reading of the Hebrew text; which they did, and also divided the canonical books into twenty-two, and these twenty-two books into chapters, and the chapters into verses.

MAST, a long, upright piece of timber, raised from the keel, through the deck of a vessel, to which the yards, sails, &c. are fixed; the whole being supported by an ingenious combination of ropes, adapted to ascend for the purpose of adjusting the sails. The mainmast is the largest mast in the ship, and in large ships is divided into lower, top, and top-gallant; the foremast is the next in size, standing near the stem of the ship; the mizenmast, the smallest of the three, stands between the mainmast and the stern.

MAS'TER, in law, the name of several officers who preside in their several departments; as *Master of the faculties*, an officer under the archbishop of Canterbury, who grants licenses and dispensations.——*Master of the horse*, an officer of the crown, who has the charge of the royal stud, and directs the equerries and other officers attached to that part of the regal establishment.——*Master of the armoury*, one who has the charge of the royal armour.——*Master of the wardrobe*, an officer under the lord chamberlain, who has the care of the royal robes.——*Master of the rolls*, a patent officer for life, who has the custody of the rolls of parliament and patents which pass the great seal, and of the records of chancery, commissions, deeds, &c. In the absence of the chancellor he sits as judge in the court of chancery; at other times he hears causes in the Rolls-chapel, and makes orders.——*Masters in chancery*, assistants to the lord chancellor and master of the rolls. There are twelve in ordinary; besides extraordinary masters; of the former some sit in court every day during term, and have business, as it arises, referred to them, such as interlocutory orders for stating accounts, and computing damages, and the like. The masters extraordinary are appointed to act in the country, in the several counties in England, beyond ten miles distance from London, by taking affidavits, recognizances, acknowledgments of deeds, &c. for the ease of suitors of the court.——*Master of arts*, the second degree taken up at Cambridge and Oxford, to which candidates are not admitted until they are past seven years standing. In the foreign and Scotch universities this is the first degree.——*Master of a ship*, the same with captain in a merchant-man; but in a king's ship he is an officer who inspects the provisions and stores, takes care of the rigging and ballast; and navigates the ship under the directions of his superior officer.——*Master at arms*, in a king's ship, he who has charge of the small arms, and exercises the petty officers, &c.

MAS'TIC, or MAS'TICH, a solid and transparent resin, of a pale yellow or whitish colour, principally brought from the island of Chios, in drops or tears, as it naturally forms itself in exuding from the mastic tree (a species of *Pistacia*) about the size and form of a pea. It should be clear, pellucid, and of a pale yellowish colour, well scented, and brittle. In medicine it is used as an astringent and aromatic. It is also used as an ingredient in drying varnishes. Mastic is consumed in vast quantities in Turkey, and is there used as a masticatory by women of all denominations, for the purpose of cleansing the teeth and imparting an agreeable odour to the breath.——*Asphaltic Mastic*, is a compound of carbonate of lime and mineral pitch, which is obtained from Pyrmont, near Seysell, and brought down the Rhone. After being roasted on an iron plate it falls to powder, in which state it is mixed with about seven per cent. of a bitumen, or mineral pitch, found near the same spot. This appears to give ductility to the mastic, and the addition of only one per cent. of sulphur makes it exceedingly brittle. The powdered asphaltic is added to the bitumen when in a melting state; also a quantity of clean gravel, to give it a proper consistency for pouring into moulds. When laid down for pavement, small stones are sifted on. It is so elastic, that (according to the account given of it in the Railway Magazine) it may be considered a species of mineral leather, on which the sun and rain appear to have no effect.

MAS'TIFF, in zoology, a variety of the canine race, having a large head, with dependent lips and ears, and distinguished by his vigilance, strength, and courage. English mastiffs were held in such high estimation at Rome, that an officer was appointed for the purpose of breeding them, and sending to the imperial city such as he thought capable of sustaining the combats in the amphitheatre.

MAS'TODON, in natural history, an extinct genus of mammiferous animals resembling the elephant and mammoth, but found only in a fossil state. There are no traces within the period of tradition or history of their existence.

MAS'TOID, in anatomy, an epithet for those processes of bone which resemble the nipple of a breast.

MASTOL'OGY, that branch of zoology which treats of mammiferous animals.

MAT'ADORE, one of the three principal cards in the games of ombre and quadrille, which are always two black aces and the deuce in spades and clubs, and the seven in hearts and diamonds.

MATE, an assistant officer to the captain of a merchant vessel, or to a surgeon on shipboard. Large ships have a first, second, and third mate.

MATE'RIALISM, the doctrine held by those who maintain that the soul of man is not a spiritual substance distinct from matter, but that it is the result or effect of the organization of matter in the body. This theory, however, does not explain how matter can think, and how physical motion can produce mental changes, which we do not observe in so many organic beings. In decided opposition to materialism, is our consciousness of the identity and liberty of man, which would be annihilated by it, because matter is governed by the necessity of nature, and free will therefore excluded.

MATE'RIA MED'ICA, a term used to denote all those substances which are employed in the prevention of diseases and the restoration of health.

MATHEMAT'ICS, the science which treats of magnitude and number, or of whatever can be measured or computed. It is divided into *pure* and *speculative*, which consider quantity abstractedly; and *mixed*, which treats of magnitude as subsisting in material bodies, and is consequently interwoven with physical considerations. *Mixed mathematics* are very comprehensive; since to them may be referred astronomy, optics, geography, hydrography, hydrostatics, mechanics, fortification, navigation, &c. Not only all objects of the bodily world, but also time, powers, motion, light, tones, &c. may be represented and treated as mathematical magnitudes. Dr. Barrow observes, "that the mathematics effectually exercise, but never vainly delude, nor vexatiously torment studious minds with obscure subtilties; but plainly demonstrate every thing within their reach, draw certain conclusions, instruct by profitable rules, and unfold pleasant questions. While they inure the mind to a constant diligence in study, they deliver us from a credulous simplicity, fortify us against the vanity of scepticism, restrain us from a rash presumption, and perfectly subject us to the government of right reason. While the mind is abstracted and elevated from sensible matter, it distinctly views pure forms, conceives the beauty of ideas, and investigates the harmony of proportions; the manners themselves are sensibly corrected and improved, the affections composed and rectified, the fancy calmed and settled, and the understanding raised and excited to more divine contemplations."

MAT'INS, the first part of the daily service, particularly in the Romish church.

MATRA'LIA, in antiquity, a Roman festival celebrated by the matrons, in honour of the goddess Mater Matula, on the third of the ides of June.

MAT'RASS, or CUCURBIT, a long straight-necked chemical glass vessel used for digestion and distillation, being sometimes bellied, and sometimes gradually tapering into a conical figure.

MA'TRICE, a mould, or whatever gives form to anything; as in printing, the mould or form in which the type or letter is cast. ——In coining, the piece of steel on which are engraved the figures, arms, &c. with which the coin is to be stamped.

MATRICULATION, the act of admitting any person to be a member of an English university.

MA'TRIX, the bed or mould of earth, &c. in which any mineral substance is found.

MATRONA'LIA, a Roman festival instituted by Romulus, and celebrated on the calends of March, in honour of Mars. It was kept by matrons, to whom presents were made by the men, as by husbands to their wives, &c. Bachelors were entirely excluded from any share in the solemnity.

MATROSS'. Matrosses are soldiers in a train of artillery, who are next to the gunners, and assist them in loading, firing and sponging the guns. They carry fire-locks, and march with the store waggons as guards and assistants.

MAT'TER, that which is the object of our senses, the distinguishing property of which is its *vis inertiæ*, or power of resisting any attempts to make it change its state. Matter is usually divided by philosophical writers into four kinds or classes: solid, liquid, aeriform, and imponderable. *Solid* substances are those whose parts firmly cohere or resist impression, as wood or stone; *liquids* have free motion among their parts, and easily yield to impression, as water and wine. *Aeriform* substances are elastic fluids, called vapours and gases, as air and oxygen gas. The *imponderable* substances are destitute of weight, as light, caloric, electricity, and magnetism.

MATTH'EW, or *Gospel of St. Matthew*, a canonical book of the New Testament. St. Matthew wrote his gospel in Judæa, at the request of those he had converted, and it is thought he began it in the year 41, eight years after Christ's resurrection. It was written, according to the testimony of all the ancients, in the Hebrew or Syriac language, which was then common in Judæa: but the Greek version of it, which now passes for the original, is as old as the apostolical times. St. Matthew's view in writing his gospel, was chiefly to show the royal descent of Jesus Christ, and to represent his life and conversation among men.

MATURANT, in pharmacy, a medicine or application to a tumour, which promotes suppuration.

MAUL'STICK, a painter's stick, on which he rests his hand when he paints.

MAUND, (in archæology) a great basket or hamper, containing eight bales. Also, a weight used in India.

MAUN'DAY THURSDAY, the Thursday in passion-week, or next before Good Friday. The word is supposed by some to be derived from the Saxon *mand*, a basket; because on that day princes used to give alms to the poor from their baskets. Others think it was called *Maunday* or *Mandate* Thursday, from the *dies mandati* (the day of command), the command which Christ gave his disciples to commemorate him in the Lord's supper, which he this day instituted; or from the new commandment that he gave them to love one another, after he had washed their feet as a token of his love to them.

MAUSOLE'UM, a general designation of any superb and magnificent monument of the dead, adorned with rich sculpture, and inscribed with an epitaph. In a more confined acceptation it signifies the pompous monument in honour of some emperor, prince, or very illustrious personage; but it properly and literally signifies that particular monument built by Artemisia, to the memory of her husband Mausolus, king of Caria, whence it derives its name. This monument was so superb that it was reckoned one of the wonders of the world.

IN ANCIENT TIMES, POWERS, NOT UNLIKE THE SOUL, WERE CONCEIVED TO EXIST IN MATTER, BY MEANS OF WHICH IT OPERATED ON THE MIND.

MAXIL'LA, in anatomy, the jaw-bone, which is either the *maxilla superior*, or *inferior*. The jaws are shorter in the human frame than in that of any other animal, in proportion to the size of the body; and this is a circumstance that adds greatly to the beauty of the face. The *maxilla superior*, or upper jaw, is composed of thirteen bones, twelve of which are in pairs. The *maxilla inferior*, or lower jaw, is that movable bone of the head which contains the lower series of teeth.

MAXIL'LARY, in anatomy, an epithet for what belongs to the jaw-bones, as the maxillary arteries, muscles, veins, &c.

MAX'IMUM, in mathematics, the greatest quantity attainable in any case: opposed to *minimum*.——In commerce, the highest price of any article, as fixed by law or regulation.

MAX'IM, an established proposition or principle; in which sense, according to popular usage, it denotes nearly the same as *axiom* in philosophy and mathematics. Maxims are self-evident propositions, and the principles of all science; for on these, and definitions, all demonstrative knowledge depends.

MAY, the fifth month in the year, reckoning from January; and the third, beginning with March, as was the ancient practice of the Romans. This month derives its name from Maia, the mother of Mercury, to whom they offered sacrifice on the first day of it; and on the 4th of the calends of May, the Romans held their *Floralia*, or festival in honour of Flora. Mr. Borlase says: "May customs are nothing more than a gratulation of the spring, to testify universal joy at the revival of vegetation." And Mr. Douce observes, "that there can be no doubt that the queen of May is the legitimate representative of the goddess Flora, in the Roman festival." It was anciently the custom for all ranks of people to go out a maying, early on the first of May; nor is this custom wholly extinct in some parts of England at the present day, though it may be accounted somewhat "ungenteel." Bourne tells us that in his time, in the villages of the north of England, the juvenile part of both sexes were wont to rise a little after midnight on the morning of that day, and walk to some neighbouring wood, accompanied with music and the blowing of horns, where they broke down branches from the trees, and adorned them with nosegays and crowns of flowers. This done, they returned homewards with their booty, about the time of sun-rise, and made their doors and windows triumph in the flowery spoil.—We need not inform those who are acquainted with our south-western counties (Hampshire more especially), that among all the rustic revelries there known, the village "maying" is pre-eminent. We well remember what happy groupes were wont to assemble on such occasions, to join the merry dance, or mingle with the crowd of practical jokers: nay, so vividly is the scene painted on the retina of our memory, that had not the incomparable author of "Our Village" already sketched it to the life, we might have been tempted to do it even here—less graphically we are sure, and, in all probability, not more correctly: so without farther preface, we introduce it:—"Here we are at the Green; a little turfy spot, where three roads meet, close shut in by hedge-rows, with its pretty white cottage, and its long slip of a garden at one angle. I had no expectation of scenery so compact, so like a glade in a forest; it is quite a cabinet picture, with green trees for the frame. In the midst grows a superb horse-chesnut, in the full glory of its flowery pyramids, and from the trunk of the chesnut the May-houses commence. They are covered alleys built of green boughs, decorated with garlands and great bunches of flowers, the gayest that blow—lilacs, Guelder-roses, peonies, tulips, stocks—hanging down like chandeliers among the dancers; for of dancers, gay, dark-eyed young girls in straw bonnets and white gowns, and their lovers in their Sunday attire, the May-houses were full. The girls had mostly the look of extreme youth, and danced well and quietly like ladies—too much so: I should have been glad to see less elegance and more enjoyment; and their partners, though not altogether so graceful, were as decorous and as indifferent as real gentlemen. It was quite like a ball-room, as pretty and almost as dull. Outside was the fun. It is the outside, the upper gallery of the world, that has that good thing. There were children laughing, eating, trying to cheat, and being cheated, round an ancient and practised vender of oranges and gingerbread; and on the other side of the tree lay a merry groupe of old men, in coats almost as old as themselves, and young ones in no coats at all, excluded from the dance by the disgrace of a smock-frock. Who would have thought of etiquette finding its way into the May-houses! That groupe would have suited Teniers; it smoked and drank a little, but it laughed a great deal more. There were a few decent matronly looking women, too, sitting in a cluster; and young mothers strolling about with infants in their arms; and ragged boys peeping through the boughs at the dancers; and the bright sun shining gloriously on all this innocent happiness. Oh, what a pretty sight it was!"

MAY'-FLY, in entomology, an insect called a water-cricket, which turns to a fly in the month of May, and is used as a bait in fishing, especially for trout.

MAYOR, the chief magistrate of a city, who, in London and York, is called lord-mayor. [See COMMON COUNCIL.]

MEAD, an agreeable sweet kind of wine, made of honey and water boiled and fermented.

MEAD'OW, in its general signification, means pasture or grass-land, annually mown for hay; but it is more particularly applied to lands that are too moist for cattle to graze upon in winter, without spoiling the sward. In America, the word *meadow* is applied particularly to the low ground on the banks of rivers, consisting of a rich

"A WRITER WHO APPREHENDS THAT HE SHALL NOT ENFORCE HIS OWN MAXIMS BY HIS DOMESTIC CHARACTER, SHOULD CONCEAL HIS NAME."—JOHNSON.

KING RICHARD THE FIRST, IN 1189, CHANGED THE TITLE OF THE CHIEF MAGISTRATE OF LONDON FROM BAILIFF TO THAT OF MAYOR.

mould or an alluvial soil, whether grass land, pasture, tillage, or wood land.

MEAD'OW-ORE, in mineralogy, conchoidal bog iron ore.

MEAD'OW-SWEET, in botany, a plant of the genus *Spiræa*, with crumpled leaves, something like those of the elm, growing in meadows. Its flower expands in the form of a rose.——*Meadow-rue*, a plant of the genus *Thalictrum*.——*Meadow-saffron*, a plant of the genus *Colchicum*.——*Meadow-saxifrage*, a plant of the genus *Peucedanum*.

MEAN, a middle state; called *arithmetical*, when it is half the sum of two extremes; *geometrical*, when it is the square root of the product of two extremes; and *harmonical*, when it is proportional to the sum of the two extremes.——*The mean distance of a planet from the sun*, in astronomy, is the right line drawn from the sun, to the extremity of the conjugate axis of the ellipsis the planet moves in; and this is equal to the semi-transverse axis, and is so called, because it is a mean between the planet's greatest and least distance from the sun.——*Mean motion*, that whereby a planet is supposed to move equally in its orbit, and is always proportional to the time.——*Meantime*, or *equal time*, that which is measured by an equable motion, as a clock.

ME'ASLES, in medicine (*rubeola*) a disorder incident to children, consisting of a fever, attended with inflammation, cough, and difficulty of breathing. Persons of all ages are liable to its attacks; but it is more common in young children, and rarely affects an individual a second time. The symptoms are hoarseness, cough, drowsiness, and, about the fourth day, an eruption of small red spots. Even when violent, the measles are not often of a putrid tendency, although such a disposition sometimes prevails. In the case of the simple measles, the best treatment is abstinence from food, and the use of mild, mucilaginous, sweetened drinks.

MEAS'URE, any given quantity by which the length, breadth, thickness, and capacity of other things may be estimated, or proportioned, for the ease, convenience, and regulation of trade and commerce. Formerly, every province, and almost every place of importance had its own measures, which proved a most perplexing hindrance to commercial intercourse. In modern times many attempts at uniformity have been made in the United Kingdom; till at length, by an act of parliament, which came into operation Jan. 1, 1826, the standard London measures and weights were declared to be the standard for weights and measures throughout the realm. This act was called the "act of uniformity;" and the system thus established, the *imperial* system.——*Measure*, in geometry, any certain quantity assumed as one, or unity, to which the ratio of other similar quantities is expressed; thus the measure of a line is the extension of a right line at pleasure, which is to be considered as unity, as an inch, a foot, or a yard.——*Measure*, in music, the interval or space of time which the person who beats time takes between the rising and falling of his hand, in order to conduct the movement sometimes quicker and sometimes slower, according to the music or subject that is to be sung or played.——*Measure*, in poetry, a certain number of syllables metrically measured.

MECHAN'ICS, that branch of practical mathematics which treats of the effects of powers or moving forces, and applies them to machines and engines. The term mechanics is also equally applied to the doctrine of the equilibrium of powers, more properly called statics, and to that science which treats of the generation and communication of motion, which constitutes mechanics, strictly so called. The knowledge of mechanics is one of those things that serves to distinguish civilized nations from savage. It is by this science, that the utmost improvement is made of every power and force in nature; and the motions of the elements, water, air, and fire, rendered subservient to the various purposes of life: for, however weak the force of man appears to be when unassisted by this art, yet, with its aid, there is hardly any thing above his reach. It is distinguished, by Sir Isaac Newton, into practical and rational mechanics; the former of which treats of the mechanical powers; the latter of the whole theory of motion. The *mechanical powers* are six simple machines to which all others, how complex soever, may be reduced, and of the assemblage whereof they are all compounded; these are the *simple lever*, the *wheel* and *axis*, the *pulley*, the *inclined plane*, the *wedge*, and the *screw*. The forces which may be employed to give motion to machines are called *mechanical agents*, or *first movers*. They are water, wind, steam, gunpowder, and the strength of man and other animals. *Water* acts by its weight, and by the velocity which it acquires from falling, in consequence of its weight. *Wind* acts by its volume or mass and its velocity. Both these agents are variable, and both act in a straight line. *Heat*, as given out by combustible materials, produces steam, or gas, or gives motion to air by making it lighter, and thus causing it to rise. *Steam*, as usually employed, generates motion, which is alternately in one direction and the opposite. The *strength of animals* is commonly made to act upon some centre of resistance, by drawing, pushing, or pressing, and produces variable motions, naturally in a straight line, but often in a curve. The motions or pressures produced by all these agents are capable of being compared with those produced by weights. They might all be referred to a common standard, the unit of which should be the force required to raise a given weight a certain number of feet in a given line.

MECHO'ACAN, White Jalap, the root of an American species of *Convolvulus*, from Mechoacan, in Mexico; a purgative of slow operation, but safe.

MECO'NIATE, in chemistry, a salt consisting of meconic acid and a base.——*Meconic acid*, an acid contained in opium.

MED'AL, a piece of metal in the form of a coin, intending to convey to posterity the portrait of some great person, or the memory of some illustrious action. The parts of a medal are the two sides, one of which is called the face or head, and the other the reverse. On each side is the area, or field, which makes the middle of the medal; the rim, or border; and the exergue, or plain circular space just within the edge: and on the two sides are distinguished the type, or the figure represented, and the legend, or inscription. Egyptian medals are the most ancient; but the Grecian medals far excel all others in design, attitude, strength, and delicacy. Those of the Romans are beautiful, the engraving fine, the invention simple, and the taste exquisite. They are distinguished into consular and imperial: the consular medals are the most ancient, though the copper and silver ones do not go farther back than the 484th year of Rome, and those of gold no farther than the year 546. Among the imperial medals, a distinction is made between those of the upper and lower empire. The first commenced under Julius Cæsar, and continued till A.D. 260: the lower empire includes a space of nearly 1200 years, and ends with the taking of Constantinople. The use of medals is very considerable: they often throw great light on history, in confirming such passages as are true in old authors, in reconciling such as are variously narrated, and in recording such as have been omitted. In this case a cabinet of medals may be said to be a body of history. It was, indeed, an excellent way to perpetuate the memory of great actions, thus to coin out the life of an emperor, and to put every exploit into the mint—a kind of printing before the art was invented. Nor are medals of less use in architecture, painting, poetry, &c.; for a cabinet of medals is a collection of pictures in miniature, and by them the plans of many of the most considerable buildings of antiquity are preserved.——*Impressions of Medals.* The following is a very easy and elegant method of taking the impressions of medals and coins. Melt a little isinglass-glue made with brandy, and pour it thinly over the medal, so as to cover its whole surface; let it remain on for a day or two till it is thoroughly dry and hardened, and then taking it off, it will be fine, clear, and hard, and will have an excellent impression of the coin.

MEDAL'LION, a medal of an extraordinary size, supposed to be anciently struck by the emperors for their friends, and for foreign princes and ambassadors.

MED'ICINE, the art which treats of the means of preserving health when present, and of restoring it when lost: an art that assists nature in the preservation of health by the use of proper remedies. It is founded on the study of man's physical and moral nature, in health and in disease. It has struggled at all times, and continues to struggle, with favourite theories; and has, with the slowness which marks all the important advancements of mankind, but lately emerged from some of the prejudices of many centuries, and will doubtless long continue subject to others. Hippocrates, who lived about the middle of the fifth century before the Christian era, is the earliest author on medicine whose writings have been preserved. He was a man of very superior medical acquirements, and, by the consent of posterity he has been styled the Father of Medicine.

MEDI'ETAS LIN'GUÆ, in law, a ury consisting of half natives and half foreigners, which is impanelled in cases where the party to be tried is a foreigner.

ME'DIUM, in philosophy, the space or region through which a body in motion passes to any point. Thus ether is supposed to be the medium through which the planets move; air, the medium wherein bodies move near our earth; water, the medium wherein fishes live and move; glass, a medium of light, as it affords a free passage; and we also speak of a resisting medium, a refracting medium, &c.——*Medium*, in logic, the mean or middle term of a syllogism, being an argument or reason for which we affirm or deny anything.——*Medium* also denotes the means or instrument by which anything is accomplished, conveyed, or carried on. Thus money is the *medium* of commerce; bills of credit or bank notes are often used as mediums of trade in the place of gold and silver; and intelligence is communicated through the medium of the press.

MED'LAR, in botany, a plant of the genus *Mespilus*, cultivated in our gardens for its fruit, which, before it is perfectly ripe, has an excessively austere and astringent taste. The medlars do not ripen on the tree, but are gathered in autumn, and kept till they approach a state of decomposition before they are considered fit to be eaten.

MEDUL'LA, in anatomy, a soft oleaginous substance contained in the cavity of the bones. The marrow of the bones, which anatomists of many ages took to be a mere shapeless and irregular mass of matter, is found in reality to consist of a number of fine subtile fat oleaginous substances, and of a number of minute vesicles of a membranaceous structure, in which it is secreted from the arterial blood in the same manner as the fat of the rest of the body.——*Medulla cerebri*, the soft substance of the brain, covered externally with a cortical substance of an ashy colour.——*Medulla oblongata*, is the lower and medullary part of the cerebrum and cerebellum, and extended to the great foramen or hole in the occipital bone of the cranium, where it gives origin to the spinal marrow, and to the nerves of the brain.——*Medulla spinalis*, or spinal marrow, is a continuation of the medulla oblongata of the brain. It is included in a kind of bony canal, formed by the vertebræ, and in this is continued from the head to the extremity of the os sacrum.——*Medulla*, in vegetable physiology, the pith of plants, which is lodged in the centre or heart of the vegetable body. It is usually

of a pulpy substance, tolerably firm though rather brittle, as may be observed in the branches of elder, the stems of rushes, &c.

MEDU'SA, a genus of worms of the order *Mollusca*, or animals consisting of tender gelatinous masses, with arms extending from the lower surface. The largest are called sea-nettles, from their causing a slight and tingling redness when touched. They are supposed to constitute the chief food of cetaceous animals, and most of them emit a vivid phosphorescence in the water.——*Medusa's head*, a name given by some to the star-fish.

MEER'SCHAUM, a fine sort of Turkish clay, consisting of hydrate of magnesia combined with silex, which, when first dug, is soft, and makes lather like soap. From this clay, pipes are made in Germany, of various forms. It assumes a beautiful brown colour after it has been used for smoking for some time.

MEGATHE'RIUM, an extinct animal, the bones of which are found in a fossil state, chiefly in South America. It has been termed the *Giant Sloth;* as it unites the generic character of the sloth tribe with that of the armadilloes, and its size must have been equal to a rhinoceros.

MELIS'SA, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. The species are perennials, and include the different varieties of Balm.

MEL'LITE, a mineral found first in Thuringia. It is of a honey colour, and is usually crystalized in small octahedrons. ——*Mellitic acid*, a substance procured from mellite.

MEL'ODRAME, or MEL'O-DRAMA, a dramatic performance in which music is intermixed; or that species of drama in which the declamation of certain passages is interrupted by music. If only one person acts, it is a *monodrama;* if two, a *duodrama*. It differs from the opera and operetta in this, that the performers do not sing, but declaim, and the music only fills the pauses, either preparing or continuing the feelings expressed by the actors. Melodramas are generally romantic and extravagant.

MEL'ODY, in music, the agreeable effect of different sounds, ranged and disposed in succession; so that melody is the effect of a single voice or instrument, by which it is distinguished from harmony. "Melody," says an eminent French musician, "is for music, what thought is for poetry, or drawing for painting."

MEL'OE, a sort of insect, the principal species of which is the oil beetle, so called because on being handled, it exudes from its legs drops of a clear, deep yellow oil or fluid, of a very peculiar and penetrating smell. They are nearly allied to cantharides, and may, if necessary, be substituted for them.

MEL'ON, in botany, a plant, of which the two principal species are the musk-melon *(cucumis melo)*, and the water-melon *(cucumis citrullus)*. The former is a rough, trailing, herbaceous plant, having rounded, angular leaves, and yellow, funnel-shaped flowers. Though originally from the warmer parts of Asia, its annual root and rapid growth enable it to be cultivated in the short summers of northern climates; but the flavour of the fruit (which is sweet and delicious) is much heightened by exposure to a hot sun. The water-melon is sweet, cool, and very refreshing. It is cultivated to a great extent in all warm countries of both continents, and even in high northern latitudes. It serves the Egyptians for meat and drink, and is the only medicine used by them in fevers.

MEM'BRANE, in anatomy, a broad, nervous, and fibrous substance, which serves as a covering for different parts of the body, particularly the brain and the viscera. The membranes differ in thickness, according to the smallness of their fibres, or the number of their planes. These particular planes are termed laminæ, and are distinguished into internal, external, and middle. Small portions of membranes, especially when they are very thin, are called pellicles; and some membranaceous laminæ are united together by the intervention of a particular substance, composed of these pellicles, and called the cellular or spongy substance.——In botany, a *membranaceous leaf* has no distinguishable pulp between the two surfaces.

MEM'OIRS, a species of history, written by persons who had some share in the transactions they relate; answering to what the Romans called *commentarii* (commentaries). They furnish the reader with interesting individual anecdotes, and often expose the most secret motives, or disclose the whole character of events, which may be barely hinted at in books of general history. These qualities, when the writer is to be relied on for his veracity and judgment, give them an advantage over other kinds of historical writings, since they satisfy the mere reader for amusement, as well as the student; but when undertaken by a person whose love for the wonderful is greater than his regard for truth, their tendency is in the highest degree pernicious. The French appear to excel all other nations in the characteristic and piquant memoirs; though, among a multitude of meagre slip-slop performances, which have of late years issued from the English press, there are certainly some that contain matter of sterling value.

MEM'ORY, that faculty of the mind by which it receives ideas, and retains the knowledge of past events. Its strength may be greatly increased by judicious culture. Attention and repetition help much to the fixing ideas in our memories: but those which make the deepest and most lasting impressions, are such as are accompanied with pleasure and pain. Without this faculty, the whole animal world would be reduced to a kind of vegetative life, such as we observe in the lowest classes of animals; for it embraces all ideas received from the senses, as well as those of an abstract character; all feelings, all emotions. Ideas received from objects of sense are

PYTHAGORAS IS SAID TO HAVE INVENTED HARMONIC STRINGS, FROM HEARING FOUR BLACKSMITHS' HAMMERS STRIKING IN HARMONY.

TO STRENGTHEN THE MEMORY, BY DIRECT EXERCISE OF ITS POWERS, IS VERY IMPORTANT; BUT IT MUST NOT BE CARRIED TO EXCESS.

THE PRINCIPLES OF MERCATOR'S PROJECTION WAS FIRST EXPLAINED BY E. WRIGHT, WHENCE THE DISCOVERY HAS BEEN ATTRIBUTED TO HIM.

sometimes curiously associated with others, so that the recurrence of the first immediately suggests the second. The cases are more striking, of course, in proportion as the organs are more acute. If, for instance, anything very agreeable or disagreeable happens to a man at the very moment of hearing a peculiar sound, or eating something of a peculiar taste, the recurrence of this sound or taste involuntarily awakens, in some organizations, an agreeable or disagreeable feeling. Another circumstance worthy of remark is, that old people lose their memory for recent events, but retain a lively impression of the events of their earlier years, which shows how much remembrance is influenced by the liveliness of the original impression. It is remarkable also, how some people, in consequence of diseases, particularly nervous fevers and apoplexies, lose the memory of everything which happened before their illness. Many other phenomena of the memory might easily be adduced did our limits permit.——*Local Memory*, among orators, is but the associating the different heads to be handled, with the objects before the speaker's eyes; so that by only looking around him, he is put in mind of what he is to say.——*Artificial Memory*, signifies the association of ideas to be remembered with other things in well-recollected order; or a method of assisting the memory by some artificial contrivance, as that of forming certain words the letters of which shall signify the date or era to be remembered. [See MNEMONICS.]

MEM'PHIAN, pertaining to Memphis; a term expressive of something very obscure: a sense borrowed from the intellectual darkness of Egypt in the time of Moses.

MEMPHI'TES, in mineralogy, a stone found at Memphis, in Egypt, which, when levigated, is laid on the parts that are to suffer by cutting and burning.

MEN'ACHANITE, in mineralogy, an oxyde of *titanium*, or mineral of an iron-grey colour, occurring in very small rounded grains, imperfectly lamellar, and of a glistening lustre; found near Menachan, in Cornwall.

MEN'DICANTS, a term applied to several orders of monks who live on alms, or beg from door to door.

MENDO'SA SUTU'RA, in anatomy, a scaly joining together of bones, as in those of the temple.

MENIS'CUS, in optics, a lens, convex on one side, and concave on the other.

MENISPERM'IC ACID, in chemistry, an acid obtained from the seeds of the menispermum cocculus.

MEN'IVER, in zoology, a small animal found in Russia, with white fur; or the fur itself.

MENOL'OGY, in the Greek church, a brief calendar of the lives of the saints, or a simple remembrance of those whose lives are not written.

MEN'SA, in archæology, denotes all patrimony or goods necessary for a livelihood.

MENSA'LIA, in law, such parsonages or spiritual livings as were united to the tables of religious houses, called by the canonists mensal benefices.

MENSA'RII, in Roman antiquity, officers appointed to manage the public treasury.

MENSO'RES, in antiquity, those officers who were sent onward to provide lodgings for the Roman emperors in their routes, and to the domestics who waited at table.——*Mensores frumentarius*, distributors of the corn.

MEN'STRUUM, in chemistry, any fluid or subtilized substance which serves to extract the virtues of a solid body by infusion, decoction, &c. Water is the menstruum of all salts, oils of resins, acids of alkalies and the like: all liquors, in short, are called *menstruums* which are used as dissolvents.

MENSURA'TION, the art or process of ascertaining the contents of superficial areas, or planes, and of solids; it is also applied to determine the lengths, heights, depths, or distances of bodies and objects. It may therefore include Longimetry, or the art of measuring lines; Planimetry, or the method of measuring surfaces; and Stereometry, or the art of measuring solids. The mensuration of a plane superficies, or surface, lying level between its several boundaries, is easy: when the figure is regular, such as a square, or a parallelogram, the height multiplied by the breadth will give the superficial contents. In regard to triangles, their bases multiplied by half their heights, or their heights by half their bases, will give the superficial measure: the height of a triangle is taken by means of a perpendicular to the base, let fall from the apex or summit. The contents of a pillar are easily ascertained, even though its diameter may be perpetually varying; for if we take the diameter in different parts, and strike a mean between every two adjoined measurements, and multiply that mean area by the depth or interval between the two, the solid contents will be found. Solids having a certain degree of regularity, may be easily measured: thus a cube is computed by multiplying first its width by its length; then their product by its height: so that a cube measuring four feet each way, would be $4\times4=16\times4=64$, which is the meaning of the *cube root*. Solid bodies, or areas, granaries, hay-stacks, &c. come under the rule laid down for cubes, &c. Those, however, who would know the art of mensuration thoroughly, must of necessity make it their study. Enough only has been shown here to describe its principles.

MEN'THA, in botany, Mint, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. The species are perennials.

MEPHIT'IC, in natural history and chemistry, a term equivalent to *noxious, pestilential*, or *poisonous*, and applied generally to vapours of that description. The gases, now called *hydrogen* and *azote*, are by some authors styled *mephitic airs*. Carbonic acid is also termed *mephitic acid*.

MERCA'TOR'S CHART, a chart, in

which the parallels of latitude and the meridians are represented by straight lines.

MER'CHANT, one who exports the produce of one country, and imports the produce of another; or, according to popular usage, any trader who deals wholesale.

MER'CURY (in Latin, *hydrargyrum*), a mineral or metallic fluid, known also by the name of *quicksilver*, and distinguished from all other metals by its extreme fusibility, which is such that it does not assume the solid state until cooled to the 39th degree below 0 on Fahrenheit's thermometer. It is consequently always fluid in temperate climates. Its specific gravity is twice that of iron, and greater than that of any other metal, except platina, gold, and tungsten. Mercury is not only found in cinnabar and other ores, but it is sometimes met with in its pure and fluid state, lodged in the accidental cavities of hard stone. It penetrates the parts of all the other metals, renders them brittle, and in part dissolves them. It is the least tenacious of all known bodies, for its parts separate into more minute ones of the same figure, with the smallest force. It readily combines with gold, silver, lead, tin, bismuth, and zinc, and on that account is usefully employed in the silvering of looking-glasses, making barometers and thermometers, and for various other purposes. When very pure, mercury is not oxydized at the common temperature of the atmosphere, but may be converted into an oxyde by boiling. A combination of oxyde of mercury and muriatic acid, obtained by sublimation, is called *muriated mercury*, or *corrosive sublimate*. *Calomel* is composed of the same substances, but with a larger proportion of mercury. ——*Mercury*, in astronomy, is a small planet that emits a bright light, though on account of its vicinity to the sun it is seldom seen by the inhabitants of the earth. It never rises so much as two hours before the sun, nor sets so much after him. Sometimes when it plunges into the sun's rays in the evening, it may be seen crossing the sun under the form of a black spot; which passage is called the *transit of Mercury*, and is in reality an annular eclipse of the sun. On account of its rapid motion, the Greeks called this planet after the name of the swift messenger of the gods, and represented it by the figure of a youth with wings at his head and feet.

MER'CY-SEAT, in scripture antiquities, a table, or cover, lined on both sides with plates of gold, and set over the ark of the covenant, on each side of which was a cherubim of gold with wings spread over the mercy-seat.

MERID'IAN (from the Latin *meridies*, mid-day), in astronomy, a great circle of the celestial sphere passing through the poles of the world, and also the zenith and nadir, crossing the equinoctial at right angles, and dividing the sphere into two equal parts, or hemispheres, the one eastern and the other western.——In geography, the meridian is a great circle passing through the poles of the earth, and any given place whose meridian it is; and it lies exactly under, or in the plane of the celestial meridian. These meridians are various, and change according to the longitude of places, so that their numbers may be said to be infinite, for all places from east to west have their meridians.——The *first meridian* is that from which all the others are reckoned, which, being totally arbitrary, has been variously chosen by different geographers; but most nations now assume the meridian of the place where they live or the capital of their country, or its chief observatory, for a first meridian, and from thence reckon the longitude of places, east and west. Thus the British reckon from the meridian of Greenwich; the French from Paris; the Spanish from Madrid, &c.——*Meridian of a globe*, is the brazen circle on which it turns, and by which it is supported. This is divided into 360 equal parts, called *degrees*. On the upper semicircle of the brass meridian these degrees are numbered from 0 to 90, or from the equator towards the poles, and are used for finding the latitudes of places. On the lower semicircle of the brass meridian they are numbered from 0 to 90, or from the poles towards the equator, and are used in the elevation of the poles.——*Meridian line*, an arch, or part of the meridian of the place terminated each way by the horizon. The exact determination of this line is of the greatest importance in all cases relating to astronomy, geography, dialling, &c., because on this all the other parts have their dependence. Without knowing the meridian line of a place, it would be impossible to make a dial, set a clock, or measure degrees on the earth's surface.——*Magnetic Meridian*, is a great circle passing through the magnetic poles, to which the needle of the mariner's compass conforms itself.——*Meridian altitude of the sun or stars*, is their altitude when in the meridian of the place where they are observed. Or it may be defined, an arch of a great circle perpendicular to the horizon, and comprehended between the horizon and the sun or star then in the meridian of the place.——*Meridional distance*, in navigation, the difference of the longitude between the meridian under which the ship is at present, and any other she was under before.

MER'LIN, in ornithology, the least of the hawk kind, but much resembling the haggard-falcon.

MER'LON, in fortification, is that part of a parapet which is terminated by two embrasures of a battery.

MER'MAID, an imaginary or fabulous creature, which seamen have described as having the head and body of a woman, with the tail of a fish. *Mermen* also have been seen, if we might trust the same authority. It is not, however, any recent fiction; ancient writers having given full credence to it. Some naturalists regard the *dugong*, a marine animal, to be the mermaid of early writers; because, of all the cetacea it approaches the nearest in form to man; and when its head and breast are raised above

the water, and its pectoral fins, resembling hands, are visible, the dugong might easily be taken for superstitious seamen for a semi-human being. The dugong is the only animal, yet known, that grazes at the bottom of the sea, without legs. It is of the form and figure of the whale. The position and structure of the mouth enable it to browse like a cow in a meadow, and the whole structure of the masticating and digestive organs, show it to live entirely on vegetables. It never comes on the land, or into fresh water, but frequents shallow inlets of the sea.

MĔ'ROPS, in ornithology, the Bee-eater; a genus of birds, order *Picæ*.

MER'ULA, (*turdus merula*, Lin.) in ornithology, the Blackbird.

MESEMBRYAN'THEMUM, in botany, a genus of plants, class 12 *Icosandria*, order 3 *Polygynia*. The species are perennials, and consist of the different Fig-marigolds.

MES'ENTERY, in anatomy, a thick fat membrane, placed in the middle of the intestines; its substance composed of membranes, fat, vessels of all kinds, and a number of glands. In the upper part, it is connected with the three superior vertebræ of the loins; and in the lower, with the intestines, and particularly with the *jejunum* and *ileum*; to which it also gives their outer coat. The uses of the mesentery are, to suspend, connect together, and retain in their due place, all the intestines; and to sustain the sanguiferous and lacteal vessels of the intestines.

MES'LIN, a term used for a mixture of various kinds of grain.

MESNE, in law, a lord of a manor, who has tenants holding under him, though he holds the manor of a superior.——*Mesne Process*, an intermediate process which issues pending the suit, upon some collateral interlocutory matter. Sometimes it is put in contradistinction to *final process*, or *process of execution*, and then it signifies all such processes as intervene between the beginning and end of a suit.

MESOCO'LON, in anatomy, that part of the mesentery, which, having reached the extremity of the *ileum*, contracts and changes its name; or the portion of the mesentery to which the *colon* is attached. The mesentery and the mesocolon are the most important of all the productions of the *peritonæum*.

MES'OLITE, a mineral of the zeolite family.

MESOPTERY''GIOUS, in ichthyology, an epithet sometimes applied to such fishes as have only one back fin, and that situated in the middle of the back.

MES'OTYPE, in mineralogy, prismatic zeolite; a mineral divided into three subspecies, fibrous, zeolite, natrolite, and mealy zeolite. The *mesotype* is said by some writers to be so named from its property, when transparent, of doubling images.

MESS, in military language, denotes a sort of ordinary, or public dinner, for the maintenance of which every officer, who takes his meals there, gives a certain proportion of his pay. In a British military mess-room the young subaltern and the veteran field-officer meet on equal terms, a soldierlike frankness prevails, and the toils of service are, as they ought to be, forgotten during the moments devoted to social hilarity.—In naval language, the *mess* denotes a particular company of the officers or crew of a ship, who eat, drink, and associate together: hence the term *messmate* is applied to any one of the number thus associated.

MESSI'AH, a Hebrew word signifying *the anointed*; a title which the Jews gave to their unexpected great deliverer, whose coming they still wait for: and a name which Christians apply to Jesus Christ, in whom the prophecies relating to the Messiah were accomplished. Among the Jews, anointing was the ceremony of consecrating persons to the highest offices and dignities; kings, priests, and sometimes prophets were anointed: thus Aaron and his son received the sacerdotal, Elisha the prophetic, and David, Solomon, and others, the royal unction. The prophecies in the Old Testament, which relate to the coming of the Messiah are very numerous, some of which may be found in Gen. iii. 15, xlix. 10: Isaiah vii. 14: Dan. ix. 25, &c. The ancient Hebrews being instructed by the prophets, had very clear notions of the Messiah; these, however, were changed by degrees; insomuch that when Jesus Christ appeared in Judea, they were in expectation of a temporal monarch, who should free them from their subjection to the Romans. Hence they were greatly offended at the outward appearance, the humility, and seeming weakness of our Saviour; which prevented their acknowledging him to be the Christ they expected.

METAB'ASIS, in rhetoric, transition; a passing from one thing to another.

METACAR'PUS, in anatomy, that part of the hand between the wrist and the fingers. The inner part of the metacarpus is called the palm, and the other the back of the hand.

METACH'RONISM, an error in chronology, by placing an event after its real time.

MET'AL, in natural history, a simple, fixed, opaque body or substance, possessing a peculiar lustre; insoluble in water, fusible by fire, concreting again in the cold, and either *malleable*, *laminable*, (*i. e.* extensible under the rolling press), or *ductile*. They are also capable when in the state of an oxyde, of uniting with acids and forming with them metallic salts; mostly fossil, sometimes found native or pure, but more generally combined with other matter; and, in general, readily distinguished by their weight, tenacity, hardness, opacity, colour, and brilliancy. All earths are believed to be combinations of some metal with oxygen; and when exposed to the action of oxygen, chlorine, or iodine, at an elevated temperature, they generally take fire, and combining with one or other of these three elementary dissolvents, in definite proportions, are converted into earthy, or saline-looking bodies devoid of metallic lustre

and ductility, called *oxydes, chlorides,* or *iodides*. Formerly only seven were known, or only seven had been decomposed from the materials with which they were mixed, and these had been discovered owing to their being sometimes found in a pure state. Chemical science has, however, decomposed other earths, and added thirty-one to the number of metals, some of them more curious than useful, so that we now reckon forty-three. Their names are as follows: 1. platinum; 2. gold; 3. silver; 4. palladium; 5. mercury; 6. copper; 7. iron; 8. tin; 9. lead; 10. nickel; 11. cadmium; 12. zinc; 13. bismuth; 14. antimony; 15. manganese; 16. cobalt; 17. tellurium; 18. arsenic; 19. chromium; 20. molybdenum; 21. tungsten; 22. columbium; 23. selenium; 24. osmium; 25. rhodium; 26. iridium; 27. uranium; 28. titanium; 29. cerium; 30. potassium; 31. sodium; 32. lithium; 33. calcium; 34. barium; 35. strontium; 36. magnesium; 37. yttrium; 38. glucinum; 39. aluminum; 40. zirconium; 41. silicium; 42. thorinum; 43. vanadium. Twelve of these are malleable, viz. platinum (or, as it as frequently called, *platina*), gold, silver, mercury, lead, copper, tin, iron, zinc, palladium, nickel, and cadmium. The following sixteen are not sufficiently tenacious to bear extension by hammering, viz. arsenic, antimony, bismuth, cobalt, manganese, tellurium, titanium, columbium, molybdenum, tungsten, chromium, osmium, iridium, rhodium, uranium, and cerium.——The term *metalloid* was given at first to the metals which have been obtained from the fixed alkalies and some of the earths. These bodies, having been found to be completely metallic, are now classed with the other metals.

METALEP'SIS, in rhetoric, the continuation of a trope in one word through a succession of significations, or the union of two or more tropes of a different kind in one word, so that several gradations or intervening senses come between the word expressed and the thing intended by it.

METAL'LIC VEINS, in mineralogy, are fissures which traverse the earth, as veins do an animal body, separating the respective rocks or strata, and filled with metallic ores, crystalizations, &c. differing from the rock in which the vein is situated. In what manner the minerals have been deposited in these receptacles, is yet considered doubtful. Some fissures appear to have been of great extent, taking a direction nearly east and west; these are considered the richest mines, and are worked with the greatest profit; they are also supposed to be the oldest. Others again, called cross veins, run nearly in a north and south direction, and are of less importance than the former. Whether these rents have been formed by desiccation, or by natural convulsions (perhaps by both), philosophers have not yet determined. Veins differ in their magnitude and position; some vary from sixty to one hundred feet wide in certain parts, and are not more than ten or twenty in others; these are commonly filled with what is called vein stuff, mixed with the metal; others are only a few inches wide. These veins, considered as fissures or rents, are not perpendicular, but incline more or less, and are open from the surface of the earth to the depth of 20 to 30 fathoms. However, these are not the only repositories for metals; there are other deposits reverse to the preceding, which are called flat or pipe veins, where the solid rock forms the roof and bottom of the mine: these are irregular in their direction and magnitude, and appear like a series of small caverns, connected with each other. The top, bottom, and boundaries are lined, and sometimes filled with spar, lead ore, &c. and the latter is met with in nests, filling cavities in solid limestone: it is even found penetrating fossil shells. The rocks in which these veins are situated, do not, on analysis, contain a particle of the metal which they enclose.——Inconsiderable veins, which diverge from the principal, are called *slips;* and such masses of ore as are of considerable magnitude, but no great length, are called *bellies* or *stock-works*.

METALLOG'RAPHY, a treatise on metallic substances.

MET'ALLURGY, the art of separating metals from their ores, comprising the processes of *assaying, refining,* and *smelting*; to which is sometimes added the art of gilding.

METAMORPHOP'SIA, in medicine, disfigured vision, or a defect of sight which causes persons to see objects under a form different from the reality.

METAMORPH'OSIS, the changing of something into a different form; in which sense it includes the transformation of insects, as well as the mythological changes related by the poets of antiquity.——By the *Metamorphoses of Insects* is meant the successive changes through which they pass from the egg to the caterpillar, or larva state, to the chrysalis, pupa, or aurelia state, and lastly to the moth, or butterfly form, when, having laid their eggs, they die.

MET'APHOR, in rhetoric, is the application of a word in some other than its ordinary use, on account of some applicability or resemblance between the two objects: thus, if we call a hero a *lion;* a shrewd, crafty fellow a *fox;* a minister, a *pillar of the state,* &c., we speak *metaphorically*. Brevity and power are the characteristic excellencies of the metaphor; novelty shows the original wit: but metaphors indulged in merely for the sake of unexpected contrast, frequently prove more allied to the ridiculous than the sublime, and ought to be but rarely used.

METAPHYS'ICS, that branch of philosophy which inquires into the science of mind, or spiritual existence. With respect to animals, it takes them up where physiology leaves them; and, proceeding higher, ventures to speak of Deity itself. The end of this science is the search of pure and abstracted truth. It casts a light upon all the objects of thought and meditation, by ranging every being with all the absolute and relative perfections and properties, modes and attendants of it, in proper ranks or classes; and thereby it discovers the va-

TIN AND COPPER MELTED TOGETHER TO FORM BRONZE, OCCUPY LESS SPACE, BY ONE FIFTEENTH, THAN THEY DO WHEN SEPARATE.

SOME METALS ARE FOUND COMBINED WITH SIMPLE SUPPORTERS OF COMBUSTION; THE CHIEF OF THESE ARE METALLIC OXYDES.

THE OPACITY OF METALS IS SUCH, THAT WHEN EXTENDED INTO THE THINNEST POSSIBLE LEAVES THEY TRANSMIT NO LIGHT.

rious relations of things to each other, and what are their general or special differences from each other; wherein a great part of human knowledge consists. It has been very pertinently remarked that "a man who contemns metaphysics must think his own nature unworthy of examination. Metaphysical inquiries, indeed, have often been disfigured with overstrained subtilty and revolting sophistry, and too often arbitrary analogies, bold comparisons, and unmeaning mysticism have claimed and received homage as having unlocked the long-hidden truth; but the same has taken place in regard to religion and politics, and all the great subjects which strongly stir the soul of man."

METAPH'RASIS, a bare or literal translation out of one language into another.

MET'APLASM, in grammar, a transmutation or change made in a word by transposing or retrenching a syllable or letter.

METAS'TASIS, in medicine, a translation or removal of a disease from one part to another, or such an alteration as is succeeded by a solution.

METATAR'SUS, in anatomy, the middle of the foot, or the part between the ankle and the toes.——The *metatarsal bones* are the five longitudinal bones between the tarsus and the toes.

METATH'ESIS, in literature, a figure by which the letters or syllables of a word are transposed.——In medicine, a change or removal of a morbid cause, without expulsion.

METEMPSYCHO'SIS, the doctrine of transmigration, which supposes that the soul of man, upon leaving the body, becomes the soul of some other animal. This was the doctrine of Pythagoras and his followers, and such is still the prevailing doctrine in some parts of Asia, particularly in India and China.

METEMP'TOSIS, a term in chronology expressing the solar equation necessary to prevent the new moon from happening a day too late, or the suppression of the bissextile once in 134 years.

METEOR, in natural history, a transitory body, or semblance of a body, appearing in the atmosphere, and caused by the action of the electric fluid upon other matters. Meteors, in the most general sense of the word, may be reduced to four classes —*igneous* or *fiery* meteors, including fireballs, falling stars, lightning, and St. Elmo's fire; *luminous* meteors, as the aurora borealis, zodiacal light, parhelia or mock-suns, haloes, &c.; *aqueous* meteors, as clouds, rain, hail, snow, &c.; and *aerial* meteors, as wind and water-spouts. It will be seen that these phenomena are of very different natures, and owing to different causes. The only connexion between them is that of a common medium; and we therefore refer to the separate articles for information concerning them: also to ELECTRICITY, METEORIC STONES, FALLING STARS, &c.

METEOROLITES, METEOR'IC STONES, or AEROLITES, are solid semi-metallic substances, which fall from the atmosphere. Although the descent of such bodies had been long reported, the fact was treated as too chimerical for belief until within these few years past; but all recent accounts of such phenomena concur in describing a luminous meteor moving through the air in a more or less oblique direction, attended by a hissing noise, and the fall of stony or semi-metallic masses, in a state of ignition. Although they have fallen in very different countries, and at very distant periods, when submitted to chemical analysis, they all agree in component parts; the metallic particles being composed chiefly of nickel and iron; the earthy, of silica and magnesia. The hypotheses to account for these visitations are various and complicated; some have explained them to be earthy matter, fused by lightning; others maintain that they are the offspring of terrestrial volcanoes; and others, that they come from the moon. [See FALLING STARS, under which head a more detailed account is given.]

METEOROL'OGY, the science which treats of the phenomena of the atmosphere. These phenomena may be classed under five distinct heads, viz. the alterations that occur in the weight of the atmosphere; those that take place in its temperature; the changes produced in its quantity by evaporation and rain; and those which arise from electric and other causes.——Meteorology borrows from chemistry her analysis to determine the composition of the air itself, and of the substances which it contains, and by which it is acted upon; the manner in which the different processes of evaporation, freezing, thawing, &c. go on, and how they affect the state of the atmosphere; the action of these invisible agents, light, heat, electricity, &c., and their tremendous effects. From physics, meteorology takes the mechanical action of these and similar powers and substances, the weight and velocity of the air, the laws of the reflection, refraction, and motion of light, &c. By these aids this science explains the formation, fall, or deposition of hail, snow, rain, dew, and frost; the action of thunder and lightning; the prevalence and properties of certain winds; the nature and causes of meteors, &c. All this, and more, is to be carefully studied by every one who would keep a meteorological register, from which, if carefully attended to, a body of maxims may be drawn that would go far to dispel a host of popular errors and delusions, and make the value of true meteorological science manifest to the most common observer.

METEOROMAN'CY, a species of divination by thunder and lightning, held in high estimation by the Romans.

METEOROS'COPY, that part of astronomy which treats of the distance of the stars and other celestial bodies.

METHEG'LIN, a liquor made of honey and water boiled and fermented, often enriched with spices.

METH'OD, a suitable and convenient arrangement of things or ideas. In logic and

rhetoric, the art or rule of disposing ideas in such a manner that they may be easily comprehended, either in order to discover the truth, or to demonstrate it to others. Method is essential to science; and without method, business of any kind will fall into confusion. In studying a science, we generally mean by *method*, a system of classification, or arrangement of natural bodies according to their common characteristics; as the method of Ray, the Linnæan method. The difference between *method* and *system* is this: *system* is an arrangement founded, throughout all its parts, on some one principle: *method* is an arrangement less fixed and determinate, and founded on more general relations.

METHOD'IC SECT, a name given to certain ancient physicians, who conducted their practice by rules after the manner of Galen and his followers, in opposition to the *empiric sect*.

METH'ODIST, a term originally applied to the founder of a sect of physicians at Rome; next to a religious sect, who, in the 17th century, defended the church of Rome from the attacks of the Protestants; and now used to designate the followers of Wesley and Whitfield, the former professing the doctrines of Arminius, and the latter of Calvin. [See the "*Biographical Treasury*" for the lives and doctrines of these.]

METON'IC CY'CLE, in chronology, the period of nineteen years, in which the lunations of the moon return to the same days of the month; so called from its discoverer Meton, an Athenian, who lived about 400 B.C. From its great use in the calendar, this is called the *golden number*.

METONYM'IA, or MET'ONYMY, in rhetoric, a figure of speech whereby one thing is put for another, as the cause for the effect, the part for the whole, and the like; as, "my friend keeps a good *table*," instead of good *provisions*: "that boy has a clear *head*," meaning *intellect*.

MET'OPE, in architecture, the interval, or space, between the triglyphs of the Doric frieze, which among the ancients used to be painted or adorned with carved work, representing the heads of oxen, &c.

METOPOS'COPY, the study of physiognomy.

ME'TRE, in poetry, a system of feet composing a verse; as pentameter, a verse of five feet, hexameter, a verse of six feet, &c. ——*Metre*, in commerce, a French measure equal to rather more than thirty-nine inches, the standard of lineal measure; being the ten millionth part of the distance from the equator to the North Pole, as ascertained by actual measurement of an arc of the meridian.

METROCEL'IDES, in medicine, marks or blemishes impressed upon the child by the mother's imagination.

METROMA'NIA, in medicine, a rage for composing verses, which is said (upon the authority of a respectable medical work) to have once seized a person in a tertian fever, who was otherwise by no means gifted with poetical powers, but who, when the fit was off, became as dull and prosaic as the most unimaginative of human beings could desire. We apprehend that fits of this kind are more frequent than the public have any idea of.

METROP'OLIS, the capital or principal city of a country or province; as London or Paris. The term metropolis is also applied to archiepiscopal churches, and sometimes to the principal or mother church of a city. The Roman empire having been divided into thirteen dioceses, and one hundred and twenty provinces, each diocese and each province had its metropolis, or capital city, where the pro-consul had his residence. To this civil division, the ecclesiastical was afterwards adapted, and the bishop of the capital city had the direction of affairs, and the pre-eminence over all the bishops of the province. His residence in the metropolis gave him the title of *metropolitan*.

MEZ'ZANINE, in architecture, an entresole, or little window, less in height than in breadth, serving to give light to an attic.

MEZ'ZO, in music, an Italian word signifying *half*. Thus *mezzo forte*, *mezzo piano*, *mezzo voce*, imply a middle degree of piano or soft. By *mezzo soprano* is understood, a pitch of voice between the soprano or treble and counter-tenor.

MEZZOTIN'TO, a particular manner of engraving, so called from its resemblance to drawings in Indian ink. To perform this, the smooth surface of the copper or steel plate is furrowed all over with an instrument made for the purpose, till the whole is of a regular roughness throughout; so that if a paper were to be worked off from it at the copper-plate press it would be black all over. When this is done, the plate is rubbed with charcoal, black chalk, or black lead, and then the design is drawn with white chalk; after which the outlines and deepest shades are not scraped at all, the next shades are scraped but little, the next more, and so on, till the shades gradually falling off, leave the paper white, in which places the plate is perfectly burnished. By an artificial disposition of the shades, and different parts of a figure on different plates, mezzotintos are printed in colours, so as to represent actual paintings.

MIAS'MA, the contagious effluvia of any putrefying bodies, rising and floating in the atmosphere, and considered to be noxious to health. One of the most powerful correctors of miasmatic effluvia is chloride of lime.

MI'CA (called also *talc*, *glimmer*, and *Muscovy glass*), is a mineral of a foliated structure, which forms the essential part of many mountains. It consists of a number of thin laminæ adhering to each other; and has long been used as a substitute for glass, particularly in Russia.

MI'CAH, a canonical book of the Old Testament, written by the prophet Micah; in which the writer censures the reigning vices of Jerusalem and Samaria, and denounces the judgments of God against both kingdoms. The birthplace of our Saviour

WHITFIELD AND WESLEY DISPLAYED ALL THE ELOQUENCE WHICH A SINCERE ZEAL COULD INSPIRE, AND RAPIDLY MADE CONVERTS.

THE MALES OF MANY SPECIES OF MIGRATORY BIRDS UNDERTAKE THEIR MIGRATIONS SEVERAL DAYS BEFORE THE FEMALE BIRDS.

is thus designated by him: "But thou, Bethlehem Ephrata, little among the thousands of Judah, out of thee shall come forth a ruler in Israel, whose generation is of old, from everlasting."

MIC'AREL, an argillaceous earth, of a brownish or blackish red colour, commonly crystalized in six-sided prisms.

MICH'AELMAS, or *Feast of St. Michael*, a festival of the Romish Church, observed on the 29th of September.

MICROG'RAPHY, the description of objects which are too minute to be seen without the help of a microscope.

MICROM'ETER, an astronomical instrument fitted to telescopes in the focus of the object-glass, by the help of which the apparent magnitude of small objects is measured with great exactness.

MI'CROSCOPE, an optical instrument consisting of an arrangement of lenses which enables the observer to see an object, or its true image, nearer than with the naked eye, and magnified accordingly. The numerous forms of microscopes may be included under the heads of *single*, *compound refracting*, and *compound reflecting* microscopes. The increase of apparent magnitude obtained by the employment of lenses, is proportioned to the difference of the distance of an object from the lens and the distance when seen without its assistance. This latter distance (the distance of distinct vision of minute objects with the naked eye) varies in different persons, and at different periods of life. Some authors adopt ten inches as the standard of the focus of the eye, under ordinary circumstances, and its decimal character makes it a convenient multiplier or divisor.——Of late diamonds have been formed into lenses in consequence of their high refractive power, whereby we can obtain lenses of any degree of magnifying power with comparatively shallow curves; and as the dispersion of colour in this substance is as low as in water, the lens is nearly achromatic.——The *solar microscope* consists of a common microscope connected with a reflector and condenser, the former being used to throw the sun's light on the latter, by which it is condensed to illuminate the object placed in its focus. This object is also in the focus of the microscopic lens on the other side of it, which transmits a magnified image of it to a wall or screen.——The principle of the *lucernal microscope* is the same, except that a lamp is used instead of the sun to illuminate the object.

MIDDLE AGES, a term used by historians to denote that period which begins with the final destruction of the Roman empire, and ends with the revival of letters in Europe, or, as some writers have it, with the discovery of America; *i. e.* from the eighth to the fifteenth century. In general, it may be said, the middle ages embrace that period of history in which the feudal system was established and developed, down to the most prominent events which necessarily led to its overthrow.

MID'SHIPMAN, in the British navy, a sort of cadet, whose duty it is to second the orders of the superior officers, and assist in the necessary business of the vessel, either aboard or ashore. No person can receive a commission, without having served a certain number of years in the royal navy in this capacity, unless he has been mate of a merchant-man, and experienced years of actual service, either in the navy or in the merchant service.

MID'SUMMER, the summer solstice. The 24th of June is Midsummer-day, which is also quarter day.

MIGRATION OF BIRDS, the annual passage of birds from one country to another in quest of provisions and mild climate. Thus, the swallow and many other species migrate into southern climates during our winter, and return in the spring. Some have altogether denied the existence of migration, because they could not understand how migrating birds could support themselves so long on the wing, as to accomplish their journeys, and at the same time live without food during their voyage. These difficulties, however, vanish altogether if we attend to the rapidity of the flight of birds. Hawks and many other birds probably fly at the rate of 150 miles an hour; an eider duck at 90 miles an hour: Sir George Cayley computes the common crow to fly at nearly 25 miles an hour; and Spallanzani found that of the swallow about 92 miles, while he conjectures the rapidity of the swift to be nearly three times greater. Ornithologists have observed that, on the old continent, birds migrate in autumn to the south-west, and in spring toward the north-east; yet the courses of rivers and chains of mountains exercise considerable influence on the direction of their flight. On the new continent the points of direction are not the same. Captain Sir E. Parry has satisfied himself that the birds of Greenland go to the south-east. It is remarkable, also, that the young of certain species do not make the same journey as the old birds; they go more to the south, so that it is very common to find, in the south of Europe, only the young birds of a certain species, whilst the older ones remain more to the north. In other species the females go farther south. Mr. White, in his *Natural History of Selborne*, says, "It does not appear to me that much stress may be laid on the difficulty and hazard that birds must run in their migrations, by reason of vast oceans, cross-winds, &c.; because, if we reflect, a bird may travel from England to the Equator without launching out or exposing itself to boundless seas—and that by crossing the water at Dover, and again at Gibraltar."

MILE, a measure of length or distance, which, in England, contains 8 furlongs, or 1760 yards, or 5280 feet.——The Roman mile was a thousand paces, equal to 1600 yards English measure.

MIL'IARY GLANDS, in anatomy, the small and infinitely numerous glands which secrete the perspiration.——*Miliary-fever*, a malignant fever, so called from the erup-

IN ANIMALS, HABIT AND INSTINCT ARE THE SAME NOW AS THEY EVER WERE; WHERE THERE IS NO MIND, ALL IS STATIONARY.

tion of certain pustules resembling millet-seeds.

MILI"TIA, a body of soldiers, regularly enrolled and trained, though not in constant service in time of peace, and thereby distinguished from *standing armies*. In England the origin of this national force is generally traced back to Alfred. The most characteristic features of the English militia at present are, that a number of persons in each county are drawn by lot, for five years (liable to be prolonged by the circumstance of the militia being drawn out and embodied), and officered by the lord-lieutenants, and other gentleman, under a commission of the crown. They are not compellable to leave their county, unless in case of invasion or actual rebellion within the realm, nor, in any case, to march out of the kingdom.

MILK, an animal fluid peculiar to females of the class *mammalia*, secreted by peculiar glands, and designed to nourish animals in the early part of their life. This fluid, which is only produced from the body on occasion of suckling, is, notwithstanding, constantly formed. It is the proper sustenance of the animal itself; all the nutritive parts of food being formed into chyle, and chyle into milk. It is of an opaque white colour, a mild saccharine taste, and a slightly aromatic smell. When this fluid is allowed to stand for some time, it undergoes spontaneous changes, and is resolved into its component parts, throwing up a white, thick, unctuous *cream* to its surface, and the milk beneath becomes thinner than before, and is of a pale bluish colour. The constituent parts of milk are,—1. the *aroma*, or odorous volatile principle, which flies off when it is fresh milked in the form of visible vapour; 2. *water*, which constitutes the greatest part; 3. *bland oil*, from which the cream is formed; 4. *curd*, which is the animal gluten that coagulates; 5. *sugar*, which, with the water, forms the serum of milk; 6. some neutral salts, as the muriate of potash and muriate of lime, which are accidental, not being found at all times, nor in every milk. Human milk is very sweet and thin; the next is that of asses, then that of mares, then of goats, and lastly of cows: whence it is prescribed in this order to consumptive persons. The *rennet* prepared of the juices of such creatures as chew the cud being mixed with milk, coagulates it into an uniform mass, which may be cut with a knife, and it thus spontaneously separates into *whey* and *curds*.—When milk contained in wire-corked bottles, is heated to the boiling point in a water bath, the oxygen of the included small portion of air under the cork seems to be carbonated, and the milk will afterwards keep fresh, it is said, for a year or two; as green gooseberries and peas do by the same treatment.—Butter and cheese are made of milk, by processes not necessary to describe in this place.

MILL, a complicated engine, or combination of machinery, to effect purposes which require great force. The force employed is sometimes water, sometimes wind, and at others steam, or horses. The principle is always the same; a main shaft enters the works, to which wheels with cogs are affixed, and the power being the contrary of the velocity, small wheels give great power, and large wheels less power; other wheels are then connected with these in various directions, and the resulting force applied to any desirable object. When corn is to be ground, large stones, cut in grooves, are made to work one against the other in such manner as to break or pulverize the grain. There are also bark mills, paper mills, and oil mills, which operate by the force of percussion; also, silk, cotton, and flax mills, which perform sundry operations; and saw mills, which revolve circular saws with great energy and precision.

MIL'LING, a process in coining, which consists in stamping the coin by the help of a machine they call a *mill*, in lieu of making the stamp by the blows of a hammer, which was formerly the mode. This mill will stamp 20,000 planchets in one day. The *planchets* are pieces of metal with a smooth flat surface fit to receive the impression intended to be given to the coin, and are of a proper size, thickness, and weight. By fixing them in the mill, between the two *dies*, or steel masses, on which the figures are previously engraved that are to be stamped on the planchet, the impression of both is received at one pull.

MILLENA'RIANS, or CHIL'IASTS, a name given to those who, in the primitive ages, believed that the saints will one day reign on earth with Jesus Christ a thousand years. The former appellation is of Latin original, the latter of Greek. The Millenarians held, that after the coming of Antichrist, and the destruction of all nations which shall follow, there shall be a first resurrection of the just alone; that all who shall be found upon earth, both good and bad, shall continue alive—the good, to obey the just who are risen as their princes—the bad to be conquered by the just, and to be subject to them; that Jesus Christ will then descend from heaven in his glory; that the city of Jerusalem will be rebuilt, enlarged, embellished, and its gates stand open night and day. The Millenarians founded their belief on the Mosaic history of the creation. Considering this history as a prototype of the fate of the world, and concluding from Psalm xc. that 1000 years make with God one day, they beheld in the six days of creation, 6000 years of terrestrial labours and sufferings, and in the seventh, the day of rest, a period of 1000 years, in which the reign of Christ should be established. This reign of 1000 years is usually styled the *millennium;* and, strange as it may appear, this wild vagary of a disordered fancy has not been without its advocates and expounders even during the nineteenth century!

MIL'LEPORE, in zoology, a genus of lithophytes or polypi of various forms, which have the surface perforated with little holes or pores, or even without any apparent per-

THE DOCTRINE OF THE MILLENIUM WAS PROMULGATED BY THE EARLY CHRISTIAN TEACHERS, WHO DELIGHTED TO DWELL ON THE THEME.

foration. When in a fossil state they are termed *milleporites*.

MIL'LET, in botany, a plant of the genus *Milium*, of several species, one of which is cultivated as an esculent grain, and, when ground, often made into puddings.

MIL'LIPEDE, in entomology, an insect having many feet; a species of Oniscus, called the wood-louse.

MILL'-STONE, or BUHR'-STONE, in mineralogy, a siliceous stone, occurring in great masses, with a straight fracture, but not so brittle as flint, though of the same hardness. It is feebly translucent, and of a grayish hue. Buhr-stones constitute a very rare geological formation, being found in abundance only in the mineral basin of Paris, and a few adjoining districts. It forms a part of the fresh-water formation; and above it there is nothing but alluvial soil, or diluvial gravel, sand, and loam.

MILT, in anatomy, the spleen, a viscus situated in the left hypochondrium under the diaphragm. Also, the soft roe of fishes, or the spermatic part of the males.

MIME, in the ancient comedy, a person who acted any character by mere gestures, and hence denominated pantomime.

MIME'SIS, in rhetoric, imitation of the voice and gestures of another person.

MIMO'SA, or the *Sensitive plant*, so called from its remarkable property of receding from the touch, and giving signs, as it were, of animal life and sensation; this motion it performs by means of three distinct articulations, viz. of a single leaf with its pedicle, of the pedicle to its branch, and of the branch to the trunk or main stem. It is also the name of a numerous tribe of plants, which are all natives of warm climates, and belong to the class *Polygamia*, order *Monœcia*.

MI'NA, a Grecian coin, valued at a hundred drachmæ. Sixty of them were equivalent to a talent.

MINA'RET, a round tower or column, generally surrounded with balconies, and erected near the mosques in Mohammedan countries, from which the people were summoned to prayers, bells not being in use among them.

MIND, the intellectual or intelligent power in man. "When the mind," says Mr. Locke, "turns its view inward upon itself, thinking is the first idea that occurs; wherein it observes a great variety of modifications, whence it frames to itself distinct ideas. Thus the perception annexed to any impression on the body by an external object, is called sensation; when an idea recurs without the presence of the object, it is called remembrance; when sought after by the mind, and again brought into view, it is recollection; when the ideas are taken notice of, and, as it were, registered in the memory, it is attention; when the mind fixes its view on any one idea, and considers it on all sides, it is called study."

MINE, a cavity under ground, formed for the purpose of obtaining minerals, often very deep and extensive. The descent into them is by a pit, called a shaft, and the excavations which follow the mineral sought are called the workings. There are mines of gold, silver, copper, iron, diamonds, salt, alum, antimony, &c. These mines are mostly dug through various strata or beds of substances, of which the interior of the earth is composed. The clues by which mines are discovered, are mineral waters, the discolouration of vegetables, the appearance of pieces of ore, or metallic sand, or various exhalations from the soil.——The art of *mining* includes the scientific knowledge requisite for opening and working mines, as well as preparing ores for use. The latter consists, in the first place, in breaking asunder the larger pieces, and then purifying them, by means of water, from the earth which adheres to them; in the separation of the coarser substances from the finer, by means of a sieve that moves up and down in water; in the breaking of the ore in stamping mills, and in the separation of the finely interspersed metal from the stone or earth with which it is surrounded, &c. It also includes the final purification of the ore, by means of acids, by amalgamation, by fusion, &c.——*Mine*, in the military art, denotes a subterraneous passage under the wall or fortification, for the purpose of blowing it up by gunpowder. The fire is communicated to the mines by a pipe or hose, made of coarse cloth, called a *saucisson*, extending from the chamber to the entrance of the gallery, to the end of which is fixed a match, that the miner who sets fire to it may have time to retire before it reaches the *chamber*, or place where the powder is lodged. The mines of a fortress are called *countermines*, the gallery of which runs under the covered way along the outer margin of the fosse.

MINERAL'OGY, that branch of natural history which makes us acquainted with the properties and relations of minerals, and teaches us to characterize, distinguish, and class them, according to their properties.

MIN'ERALS, the general name for all metals and metallic substances, whether pure, or as ores, or oxydes, in which latter sense it includes all earthy substances, because they are considered as oxydes of metals. Minerals were formerly divided into salts, earths, inflammable substances, and ores; a division which serves for a general distribution: but a more scientific arrangement into classes, orders, genera, species, subspecies, and varieties, has been adopted to meet the more precise views of modern mineralogists. Among this varied class of materials, many are compounded of such principles, and formed under such circumstances and situations in the earth, that it is difficult to distinguish them without having recourse to the test of experiment. The valuable mineral products of Britain lie in the northern and western sides, the other sides consisting of secondary formations and alluvial soil.

MIN'ERAL WA'TERS are of various kinds, but generally so far impregnated with foreign matter as to give them a sensible flavour and a specific action upon the

animal economy. They are usually divided into four classes: acidulous or carbonated, saline, chalybeate or ferruginous, and sulphureous. They are also further divided into warm (or thermal) and cold, as well as into natural and artificial. The saline springs consist, in general, of salts of soda and lime, or of magnesia and lime, with carbonic acid and oxyde of iron: such are those of Pyrmont, Seidlitz, Epsom, &c. The ferruginous waters have a decided styptic taste, and are turned black by an infusion of gall-nuts. The iron is sometimes in the state of an oxyde, held in solution by carbonic acid; sometimes it exists as a sulphate, and sometimes both as a sulphate and carbonate: among these are the waters of Spa, Vichy, Cheltenham, Tunbridge, &c. The acidulous waters are characterized by an acid taste, and by the disengagement of fixed air: of this kind are the waters of Bath, Buxton, Bristol, &c. The sulphureous waters are easily recognized by their disagreeable smell, their property of tarnishing silver and copper, &c.: of this class are the waters of Aix-la-Chapelle, Harrowgate, and numerous others.—The artificial mineral waters are produced in the laboratories of the chemists, and are either merely imitations of the natural waters, or composed of different ingredients, so as to form compounds, valuable for medicinal purposes, but not known to exist in nature.

MINERVA'LIA, in Roman antiquity, festivals celebrated in honour of Minerva, in the month of March; at which time the scholars had a vacation, and usually made a present to their masters, called from this festival *minerval*.

MIN'IATURE, a small painting in water-colours, consisting of little points or dots instead of lines on ivory, or some other smooth material, and used in taking portraits; also the portrait itself.

MIN'IM, in music, a note equal to two crotchets, or half a semibreve.

MIN'IMS, a religious order in the church of Rome, founded by St. Francis De Paula, towards the end of the 15th century.

MIN'IMUM, the last quantity assignable in a given case; opposed to *maximum*.

MI'NING COM'PANIES. As we have elsewhere commented on the disastrous consequences which followed the various speculative associations that sprung up in London during the years 1824 and 1825, we take this opportunity of inserting (in corroboration of what we have written) some valuable observations, by Mr. M'Culloch, on the "mining companies" of that period, as forming a prominent feature in the popular delusions which were then so rife with ruin. If it be asked why we attach so much importance to this subject, we reply, that the motive which impels us to speak of these "doings" is not merely a vain desire to perpetuate the remembrance of an era in our commercial history, as dishonest as it was discreditable, but to point to them as admonitory hints of what may reasonably be expected from many of the grand projects which still court the eye in every possible direction. Look at the public prints; see what magnificent schemes are *at present* afloat—what magniloquent advertisements are daily announcing *embryo* companies with their millions of capital! (flourishing on paper); and, above all, observe what a sudden transformation takes place in the living representatives of all this patriotic enterprize—the veriest grubs of yesterday, now fluttering in the sun a busy swarm of gilded butterflies. "The *mania* for mining concerns, which raged in London and the empire generally in 1824 and 1825, after the opening of Mexico and other parts of Spanish America to our intercourse, forms a remarkable, and, we are sorry to add, disgraceful era in our commercial history. Now that the madness is past, we have difficulty in conceiving how men in the habit of sober calculation could be led to entertain such romantic speculations, and to pay such high premiums for shares in distant and uncertain undertakings. We may, therefore, be excused for appropriating a page or two to the history of an infatuation hardly second to that which led to the South Sea and Mississippi schemes. These associations were formed in London early in 1824, and during the spring and summer of that year their stock or shares bore only a small premium; but towards the winter it began progressively to rise, to the surprise of several of the directors; seeing that it arose less from any favourable intelligence of the mines (for the account from Mexico merely reported the arrival of the English agents) than from a blind ardour and spirit of speculation in the public—a spirit which, seeing nothing tempting in our own funds, or in those of continental Europe, directed itself to distant objects, and particularly to Spanish America. It appeared as if our countrymen were about to reap an immediate harvest; to lay their hands on a treasure hid for ages. America, it is said, had been discovered, in one sense, above three centuries; but this was the true discovery,—the effectual access to its resources. Every new contract for a Mexican mine produced a rise in the shares of the companies, as if this fresh undertaking must necessarily be a source of profit to the others! And the result was, that in January, 1825, the premiums on the shares of each of the companies mentioned above exceeded cent. per cent., although no substantial reason could be given for any advance whatever. It must not, however, be imagined that this rise of price was occasioned solely by the competition of individuals who intended to continue to hold stock, and to trust to the dividends made by the companies for a return. That this was the case in the first instance is speaking generally true. But others, actuated by very different views, speedily entered the field. A peculiar combination of circumstances, at the head of which must be placed an almost incredible degree of ignorance and folly on the part of a considerable portion of the public, spread a spirit of gambling among all classes. Many who were most eager in the pursuit of shares, intended

only to hold them for a few days or weeks, to profit by the rise which they anticipated would take place, by selling them to others more credulous or bold than themselves. The confidence of one set of speculators confirmed that of the others. Meanwhile the public gullibility, or rather its indiscriminating rapacity, was liberally administered to. Company after company was formed without any previous compact; in other words, without any foundation whatever! The plan was to fix on a district in America, understood to contain mines; to form a company bearing the names of such districts; to obtain a first payment of the shareholders, and to send out agents, or commissioners, as they were termed, to survey the district and engage the mines. Such was the case of most of those having the names of districts in South America, subjoined to the present statement; it was the case also of the Hispaniola or St. Domingo companies, formed on the basis of accounts given by Dr. Robertson of mines enough in the island some three centuries ago! and yet lawyers, clergymen, and even the nobles of the land were candidates for shares in these miserable bubbles, in the hope of finding (in which luckily most of them were disappointed) some dupe to buy their shares at a premium!"

MIN'ION, the name given to a small kind of printing type (two sizes larger than the type used for this volume). The word is of French origin (*mignon*, a darling) and, in its usual acceptation, signifies the favourite of a prince, on whom he lavishes undeserved favours.

MIN'ISTER, the pastor of a church, duly authorized to perform religious worship in public, administer the sacraments, &c. ——In politics, one to whom a sovereign prince intrusts the administration of the government; as, a *minister of state;* the *prime minister;* or a *foreign minister.* In Great Britain, the words *ministers* and *ministry* are used as collective names for the heads of departments in the state, but the individual members are not so designated. In their separate offices they stand thus: 1. first lord of the treasury; 2. lord high chancellor; 3. chancellor of the exchequer; 4. secretary of state for foreign affairs; 5. secretary of state for the colonial department; 6. secretary of state for the home department; 7. president of the council; 8. lord privy seal; 9. first lord of the admiralty; 10. president of the board of control; 11. paymaster of the forces; 12. secretary at war; and 13. chancellor of the duchy of Lancaster. The prime minister (who is generally the first lord of the treasury) is the one who receives the sovereign's order to form a ministry, or, in other words, to appoint men of his own sentiments to fill the chief offices. Those of the ministry who are peers sit in the house of lords; the others sit in the house of commons, in virtue of being elected members, which is indispensable.——*Foreign minister,* a person sent from one government to another, and accredited to the latter, in order to transact public business in the name of his government. [See AMBASSADOR, and DIPLOMACY.]

MIN'IUM, the red oxyde of lead, procured by exposing this metal to a great heat and a free access of air. It contains sulphate and muriate of lead, oxyde of copper, silex, &c.

MINK, in zoology, a quadruped of the genus *Mustela,* inhabiting the northern parts of Europe and also America. It can swim and dive well, and is generally to be found on the banks of rivers, where it preys upon small fish, frogs, rats, mice, &c. Its fur is fine, but not very valuable. When irritated, the mink exhales a fetid musky smell.

MIN'NESINGERS, a name given to the German lyric poets of the middle ages, on account of love being the chief subject of their poems, the ancient German word *minne* being used to denote a pure and faithful love. After the fashion of the Provençal troubadours, the minnesingers engaged in poetical contests for the gratification of princes and ladies of the court. Some among them were poor, and earned their living by reciting their songs from court to court; but most of them sang merely for pleasure when their swords were unemployed.

MIN'NOW, in ichthyology, the name applied to several species of small freshwater fish, generally of the genus *Cyprinus.*

MI'NOR, in law, an heir male or female, under the age of twenty-one.——*Minor,* in logic, the second proposition of a regular syllogism.——*Minor,* in music, signifies *less,* and is applied to certain concords or intervals which differ from others of the same denomination by half a tone.

MINOR'ITY, in law, a state of being under age. Also the smaller number of persons who give their votes on any questions, particularly in parliament: opposed to *majority.*

MINT, in British history, a place where the national coinage is performed. In minting, or coining money, the first process is that of melting metal in crucibles and pouring it into moulds, where it is formed into plates. The plates are afterward passed through a flatting-engine, by which their thickness is regulated. They are next, with the assistance of an instrument called a trepan, cut into planchets, or circular pieces. The planchets are then duly weighed; and, being boiled and made clean, conveyed to the mill, by which their edges are marked. The coining apparatus of the Royal Mint of London is justly esteemed a masterpiece of mechanical skill and workmanship. It was erected in 1811, under the direction of the inventor, Mr. Boulton; and has since been kept in almost constant employment. Coins, of sufficient thickness, sometimes receive inscriptions on their edges; but others only a small pattern, commonly called the *milling.* The coining-mill stamps the effigy, symbol, or legend required. This machine is so expeditious, that twenty thousand planchets may be stamped in a day. "The only attention which this noble

machine requires," says Dr. Ure, "is that of a little boy, who stands in a sunk place before the press, and always keeps the tube full of blanks. He has two strings, one of which, when pulled, will put the press in motion by the concealed mechanism in the apartment above; and the other string, when snatched, stops the press. This coining operation goes on at the rate of 60 or 70 strokes per minute; and with very few interruptions during the whole day. The press-room at the Royal Mint contains eight machines, all supported on the same stone base; and the iron beams between the columns serve equally for the presses on each side. The whole has therefore a magnificent appearance. The eight presses will strike more than 19,000 coins in an hour, with only a child to supply each."

MINT, or MEN'THA, in botany, a genus of herbaceous plants, whose roots are perennial, used for culinary and medicinal purposes. There are nineteen species, all of which contain much essential oil, and have an agreeable odour. To the taste they are bitter, aromatic, and pungent. The *mentha piperita*, or peppermint, is the most powerful, and, on this account, is most generally employed in medicine. The *mentha viridis*, or spearmint, is milder, and more commonly employed for culinary purposes.

MIN'UET, a dance in slow time and with short measured steps, which requires great dignity and grace of carriage.

MIN'UTE, the sixtieth part of the degree of a circle, and denoted thus (′); as a second, or sixtieth part of a minute, is by (″). Also, the sixtieth part of an hour. We often speak both of *minutes* and *moments* in order to convey a meaning of time indefinitely short; as, "I will be with you in a minute," &c.——*Minute*, in architecture, usually denotes the sixtieth, sometimes the thirtieth part of a module.——*Minute* is also used for a short memoir, or sketch of a subject, taken in writing; a note to preserve the memory of a thing.

MINU'TIÆ (Latin), the smaller particulars or minute details of anything.

MIRABI'LIS, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are perennials, and consist of the varieties of the Marvel of Peru.

MIR'ACLE, an event or effect produced in a manner different from the common and regular method of providence, by the interposition either of God himself, or some superior agent to whom He delegated the power. Lord Bacon observes, that a miracle was never wrought by God to convert an atheist, because the light of nature might have led him to confess a God: but miracles, says he, are designed to convert idolaters, and the superstitious, who have acknowledged a deity, but erred in the manner of adoring him; because no light of nature extends so far as fully to declare the will and true worship of God. In examining the different objections which have been urged against miracles, it will be seen that they arise, in general, from a neglect of the existence of a moral system: when it is objected that they are against the "usual course of nature," that is, against all we know of the government of God, it is forgotten that they are entirely in accordance with his moral government, and that experience as fully proves the existence and nature of this government, as of the physical system of the world.

MIRAGE, an optical phenomenon, produced by refraction, and which consists in the unusual elevation or apparent approximation of coasts, mountains, ships, or other objects, accompanied by inverted images of the same The appearance presented is that of a double image of the object in the air; one being in the natural position, the other inverted, so as to resemble a natural object and its inverted image in the water. It may be produced whenever the rays of light meet, in an oblique direction, the surface of a less refracting medium than that in which they were previously moving: they are thus turned back into the original medium in the same direction in which they would be impelled by reflection taking place at the common surface of the two mediums.

MIR'ROR, in optics, the surface of any polished metal, or glass silvered on its posterior side, so as to reflect the rays of light which fall upon it, and to represent objects. Mirrors are either flat, as looking-glasses; concave, for the purpose of converging the rays of light; or convex, for the purpose of diverging the rays of light. The objects viewed in convex mirrors are diminished, but seen in an erect position, and appear to emanate from a point behind the mirror: this point, which is its focus, will be half the radius of convexity behind the surface, and is called the *negative* or *imaginary* focus because the rays are not actually collected as by a concave mirror, whose focus is called *real*.—It is probable that brazen mirrors were the first kind used, but silver reflects the most, though it is too expensive a material for common use; most metals, however, and even wood gilded and polished, will reflect very powerfully; but since the invention of glass, and the application of quicksilver to it, it has been universally employed for plain mirrors in houses.

MISCELLA'NEÆ, the term given to one of Linnæus's natural order of plants, comprehending such as were not included in the other orders.

MISCH'NA, or MIS'NA, the code or collection of the civil law of the Jews. The Jews pretend, that when God gave the written law to Moses, he gave him also another not written, which was preserved by tradition among the doctors of the synagogue, till through their dispersion they were in danger of departing from the traditions of their fathers, when it was judged proper to commit them to writing.

MISDEMEAN'OUR, in law, a minor offence, or one of less magnitude than that which is generally designated a *crime*, the latter being, in common usage, made to denote an offence of a more atrocious character.

AS ONE PLAIN MIRROR REFLECTS THE HEAT OF THE SUN, SO THE REFLECTION OF TWO, THREE, OR MORE, NECESSARILY AUGMENTS THE HEAT.

NEARLY HALF A MILLION OF MONEY IS ANNUALLY COLLECTED IN GREAT BRITAIN AMONG THE RELIGIOUS ASSOCIATIONS FOR MISSIONARIES.

THE SOCIETY FOR PROMOTING CHRISTIAN KNOWLEDGE WAS FOUNDED IN 1699; THAT FOR THE PROPAGATION OF CHRISTIANITY IN FOREIGN PARTS, IN 1701.

MISERE'RE, a title given to the 51st psalm, usually called the Psalm of Mercy.

MIS'LETOE (*viscum album*), in botany, a plant which always grows on trees, and was formerly thought, on that account, to be an excrescence of the tree; but it has been found to be propagated by the seed or berry which is conveyed by the missel thrush from one tree to another: probably the viscous part of the berry sticks to his beak, and in his attempts to disengage himself from it by striking his beak against the bark of the tree, the berry sticks to the latter; and if it happen to light on a smooth part, it will take root, and sprout out the next winter. The misletoe was held sacred by the Druids, because they had an extraordinary reverence for the number *three;* and not only the berries, but the leaves of the misletoe, grow in clusters of three united on one stalk. Its growing upon the oak, their sacred tree, was doubtless another cause of its veneration. When the end of the year approached, the Druids marched with great solemnity to gather the misletoe of the oak, in order to present it to Jupiter, inviting all the world to assist them at this ceremony, with these words: "The new year is at hand, gather the misletoe."

MISNO'MER, in law, a misnaming or mistaking a person's name. The christian name of a person should always be perfect, but the law is not so strict in regard to surnames, a small mistake in which will be overlooked.

MISPRIS'ION, in law, any high offence under the degree of capital, but bordering thereon.——*Misprision of treason* consists in a bare knowledge and concealment of treason, without assenting to it. Misprisions are called *negative*, when they consist in the concealment of something that ought to be revealed; and *positive*, when they consist in the commission of something which ought not to be done.

MIS'SAL, in the Romish church, the book which contains the prayers and ceremonies of the mass. Some early missals are beautifully executed, and are objects of bibliomania.

MISSA'LIA, the money paid to a Catholic priest for a mass read for the dead.

MISSIL'IA, in antiquity, were a certain kind of largesses thrown amongst the Roman people, such as small coins of gold or silver, sweetmeats, &c. Sometimes animals, as sheep, goats, oxen, deer, &c. were let loose to be caught and carried off by the populace.

MIS'SIO, among the Romans, was a full discharge given to a soldier after twenty-years' service, and differed from the *exauctoratio*, which was a discharge from duty after seventeen years' service.——*Missi* also signified a rescue sent by the emperor or person who exhibited the games, to a wounded gladiator.

MIS'SIONS and MIS'SIONARIES. All religious communities, from the earliest ages of Christianity, have endeavoured to propagate their tenets, not by the force of arms, but by the persuasive precepts of the Gospel; and there is scarcely a corner of the habitable globe which has not been penetrated by men expressly sent out to carry its glad tidings to pagan nations. Foremost among the Protestant countries which have thus distinguished themselves, is England; and the missionary system has undoubtedly contributed much to the diffusion of the Gospel, though it cannot be denied that, in the choice of persons and in the objects proposed, many mistakes have been committed, through partial views or misdirected zeal. Generally speaking, however, great success has attended their labours; and the immense funds which are annually raised by voluntary contribution for the respective missions, must be a convincing proof that their supporters are actuated by an earnest desire to see the blessings of Christianity and civilization universally extended.

MISTS, or FOGS, vapours hovering over the earth, which are either drawn upwards by the rays of the sun, or fall down by their own weight as dew, or, in cold weather, as hoar frost. [See CLOUDS, FOGS, &c.]

MITE, in entomology, an insect belonging to the genus *Acarus*, so small that it is scarcely visible to the naked eye, except by its motion. As seen through a microscope, it is found to have eight legs, two eyes, one on each side the head, and two jointed tentacula. The mites inhabiting cheese are so minute that to the naked eye they appear like moving particles of dust. They are extremely voracious, and will even prey on each other, and are so tenacious of life that they have been kept alive for many months between object-glasses of a microscope.——*Mite*, in commerce, a small coin formerly current, equal to about one-third part of a farthing. In Scripture, the piece of money called a *mite*, was the quarter of a denarius, or about seven English farthings.

MITH'RIDATE, in pharmacy, an antidote against poison, or a composition in form of an electuary, supposed to serve either as a remedy or a preservative against poison.

MI'TRA, in antiquity, a cap or covering for the head, worn by the Roman ladies, sometimes by the men, but it was looked upon as a mark of effeminacy in them, especially when it was tied upon their heads. Amongst the Greeks, *mitra* was a piece of defensive armour made of brass, lined with wool, and worn next to the skin, under the coat of mail.

MITRA'LES VAL'VULÆ, in anatomy, two valves situated in the left ventricle of the heart, at the ingress of the pulmonary vein, serving to hinder the ingress and regress of the blood from the heart into the veins again, while they are constricted.

MI'TRE, a sacerdotal ornament worn on the head by bishops and certain abbots on solemn occasions; being a sort of cap, pointed, and cleft at top. The high priest among the Jews wore a mitre or bonnet on his head. The inferior priests among the Jews had likewise their mitres, but in what particulars they differed from that of the high priest is at this time uncertain. Some

HISTORICAL TABLETS AND MEDALLIONS," &c. &c. &c. BY MR. J. TODD, OF WINCHESTER.

writers contend that the ancient bishops wore mitres, but this also admits of considerable doubt. Among the primitive Christians, there was a class of young women who professed a state of virginity and were solemnly consecrated thereto, who wore a purple and golden mitre, as a badge of distinction. His holiness the pope has four different mitres, which are more or less richly adorned, according to the solemnities of the festivals on which they are worn. The cardinals anciently wore mitres, and some canons of cathedrals in Roman Catholic countries have the privilege of wearing the mitre. According to several authors, it was at first a part of female costume, and when worn by a man was considered as indicative of effeminacy.

MIT'TIMUS, in law, a precept or command in writing under the hand and seal of a justice of the peace, or other proper officer, directed to the gaoler or keeper of a prison, for the receiving and safe keeping of an offender charged with any crime until he be delivered by due course of law.

MIXED BODY, in philosophy and chemistry, that which is compounded of different elements or principles; in which sense it stands distinguished from *simple* or *elementary*, or bodies consisting of one principle only.

MIX'TURE, in pharmacy, a liquid medicine which receives into its composition not only extracts, salts, and other substances dissolvable in water, but powders, &c., which are not dissolvable.

MNEMON'ICS, the art of assisting the memory—an art which, when founded on a simple system, is of incalculable use to all persons, but more especially to those who wish to study history and the sciences to advantage. The ancients were well acquainted with mnemonics; according to some, the science came from the East to the Greeks; others consider the poet Simonides as the inventor of them.—The principal difficulty in attaining a competent knowledge of history, consists in retaining the dates of the several epochas, eras, &c. to which the principal occurrences in history belong; but this difficulty is considerably obviated by "memorial lines," made up of artificial words, invented, or adopted by Dr. Grey, in a work entitled "Memoria Technica," which was first published upwards of a century ago. "Of all things," says a celebrated philosopher and scholar, "there is the greatest difficulty in retaining *numbers*. They are like grains of sand, which will not cohere in the order in which we place them; but by transmuting the figures into letters, which easily cohere, in every form of combination, we fix and retain numbers in the mind with the same ease and certainty with which we remember words." And it is to this end, chiefly, that the Memoria Technica is directed.

MOAT, in fortification, a deep trench or ditch, dug round the ramparts of a fortified place, to prevent surprises. The brink of the moat next the rampart, is called the *scarp*; and the opposite one, the *counterscarp*.

MO'CHA-STONE, in mineralogy, *dendritic agate*; a mineral, in the interior of which appear delineations of shrubs destitute of leaves, and which are either of a brown, black, or green colour. In some cases these may have been produced by the filtration of the oxydes of iron and manganese; but in other cases they appear to be vegetable fibres, sometimes retaining their natural form and colour, and sometimes coated by a ferruginous crust.

MOCK'ING-BIRD (*turdus polyglottos*), the American thrush. Although this bird cannot vie with most of the feathered tribe in America in brilliancy of plumage, it is much sought for on account of its wonderful imitative powers. Its own natural song is bold, full, and exceedingly varied; but in addition to the fullness and melody of its original notes, it has the faculty of imitating the notes of all other birds, from the humming-bird to the eagle. In measure and accent it faithfully follows its originals, while in force and sweetness of expression it greatly improves upon them. A bystander might suppose that the whole feathered tribes had assembled together on a trial of skill, each striving to produce his utmost effect, so perfect are the mocking-bird's imitations.

MODE, in metaphysics, denotes the manner of a thing's existence, which is either simple or mixed. Simple modes are only combinations of the same simple idea: thus by adding units together, in distinct separate collections, we come by all the several modes of numbers, as a *dozen*, a *score*, a *thousand*, &c. Mixed modes, on the contrary, are compounded of simple ideas of different kinds, as *beauty*, which consists in a certain composition of colour and figure, causing delight in the beholder. —— *Essential*, or *inseparable Modes*, are attributes without which the substance cannot subsist, as wisdom, &c. in God, &c.—— *Non-essential*, or *separable Modes*, are attributes affecting created substances, and affixed thereto as long as is necessary, as coldness in water, &c.——*Mode*, in music, a regular disposition of the tune in relation to certain principal sounds, which are called the essential chords of the bass, or the essential sounds of the *mode*.——The word *mode* is applicable also to particular acts, or a series of acts, or to the common usage of a place or people. We say, this person has a particular *mode* of dressing his hair; that one has a certain *mode* of walking, &c.; or, we find it necessary to conform to the usual *mode* of living.

MOD'EL, an original pattern, or the shape or design of anything in miniature: particularly applied to an artificial pattern made in wood, stone, plaster, or other material, for the more correct execution of some great work, and to afford an idea of the effect to be produced. Living models, for the purpose of studying the play of the muscles, the varieties of expression, and the relative proportions of the human form, are provided in all academies for painting.

MODERA'TOR, a person who presides

THE MODEL OF THE BATTLE OF WATERLOO, EXHIBITED AT THE EGYPTIAN HALL, PICCADILLY, IS A WONDERFUL SPECIMEN OF PATIENCE AND INGENUITY.

at a public assembly, to propose questions, preserve order, and regulate the proceedings. Thus the president of the annual assembly of the church of Scotland is styled the *moderator*.

MOD'ESTY, that amiable state of feeling which accompanies a moderate estimate of one's own qualities, and manifests itself in unobtrusive manners—conceding to others all due honour and respect, and assuming less to one's self than others are disposed to yield. Though it may partly arise from timidity and diffidence, genuine and unaffected modesty is mainly derived from true humility and purity of mind—the sources of honour and human excellence.

MODIFICA'TION, in philosophy, that which modifies a thing, or gives it this or that manner of being. Quantity and quality are accidents which modify all bodies. According to Spinosa's system, all the beings that compose the universe are only so many different modifications of one and the same substance; and it is the different arrangement and situation of their parts, that make all the difference between them.

MODIL'LION, in architecture, an ornament in the cornice of the Ionic, Corinthian, and Composite columns; a sort of bracket serving to support the projecture of the larmier or drip.

MO'DIUS, a Roman dry measure for all sorts of grain, containing 32 *heminæ* or 16 *sextarii*, or one-third of the *amphora*, amounting to an English peck.

MO'DO ET FOR'MA (in manner and form), in law, are words frequently used in pleadings, &c. and particularly in a defendant's answer, wherein he denies to have done what is laid to his charge, as affirmed by the plaintiff.

MODULA'TION, in music, the art of composing agreeable to the laws prescribed by any particular key, or of changing the mode or key. Also the regular progression of several parts through the sounds that are in the harmony of any particular key, as well as the proceeding naturally and regularly from one key to another. In pieces of a mild and quiet character, it is not proper to modulate so often as in those which have to express violent and great passions. Where everything relating to expression is considered, modulation also must be so determined by the expression, that each single idea in the melody shall appear in the tone that is most proper for it.

MOD'ULE, in architecture, a certain measure, taken at pleasure, for regulating the proportions of columns, and the symmetry or disposition of the whole building. The usual module of a column is its semidiameter at the base.

MO'DUS, an equivalent in money, land or other valuable consideration, given to the minister or vicar by the owners of land in lieu of tithes. The whole phrase is *modus decimandi*, though *modus* alone is generally used.

MO'DUS OPERAN'DI, a Latin phrase, signifying the way or method by which an operation or performance of any kind is effected.

MOGUL', the name of a prince or emperor of a nation in Asia called Moguls or Monguls.

MO'HAIR, the hair of a goat, which inhabits the mountains in the vicinity of Angora in Turkey, of which the natives make the cloth called camlets or mohair.

MO'HAIR-SHELL, in conchology, a peculiar species of *Voluta*, resembling on the surface mohair, or a close web of the silkworm.

MOHAM'MEDANS. [See MAHOMETANS.]

MOI'DORE, a Portuguese coin equal to 27*s.* sterling.

MOLA'RES, or DENTES MOLARES, *Molar teeth*, in anatomy, the large teeth, sometimes called the grinders.——*Molar glands*, two salival glands, situated on each side of the mouth.

MOLE, a mound or massive work formed of large stones laid in the sea by means of coffer-dams, extended in a right line or as an arch of a circle, before a port, which it serves to defend from the violent impulse of the waves; thus protecting ships in a harbour. The word is sometimes used for the harbour itself. Among the Romans, a kind of mausoleum, built like a round tower on a square base, insulated, encompassed with columns, and covered with a dome.

MOLE, in zoology, a small animal of the genus *Talpa*, from five to six inches in length, which, in search of worms or other insects, forms a road just under the surface of the ground, raising the soil into a little ridge. Its conformation enables it to burrow with great ease; it has no external ears; and its eyes are so minute, and so concealed by its fur, that it has given rise to the opinion that it is formed without these important organs. Moles live in pairs, and are chiefly found in places where the soil is loose and soft. The females bring forth four or five young, for the preservation of which the parents construct a habitation, or nest, with great diligence and ingenuity.——*Mole-hill*, a little mound or elevation of earth thrown up by moles working under ground.

MO'LE-CRICKET, in entomology, an insect of the genus *Gryllus*, noted for its rapidity in burrowing, as well as for its destructiveness in gardens. The female forms a nest of clay, about as large as a hen's egg, and deposits in it nearly 150 eggs, for the preservation of which the greatest care is taken. Wherever a nest is situated, avenues and intrenchments surround it; there are also numerous winding passages which lead to it, and the whole is environed by a ditch, which presents an impassable barrier to most insects. At the approach of winter, the mole-crickets remove their nests to so great a depth in the earth as to avoid any injury from the frost. When the mild season returns, they raise it in proportion to the advance of the warm weather, and at last elevate it so near the surface as to permit the sun and air to act on it. The male has a chirp, or low jarring note, which may be heard in the evening or night.

A BEAUTIFUL MODEL WAS MADE, IN WOOD, OF THE NEW TOWN OF EDINBURGH, BEFORE ANY PART OF IT WAS BEGUN TO BE BUILT.

THERE ARE TWO DISTINCT KINDS OF MOLLUSCOUS ANIMALS, THOSE WITH A HEAD CALLED "CEPHALOUS," AND THOSE WITHOUT, OR "ACEPHALOUS."

MOLLITIES OS'SIUM, in medicine, a diseased state of the bones, in which they are preternaturally soft.——*Mollities Unguium*, a preternatural softness of the nails.

MOLLUS'CA, in zoology, a class of animals whose bodies are soft, without an internal skeleton, or articulated covering. Some of them breathe by lungs, others by gills; some live on land, others in water. Some are testaceous or provided with shells, as the snail, others naked. Most of the mollusca are possessed of great irritability, frequently continuing apparently alive after they are cut asunder. Some produce their young alive, while others are oviparous. The uses of this numerous class are extremely varied: many of them are taken as food by man, and others supply nutritious prey for birds and fishes.

MOLYB'DENA, in mineralogy, an ore of *molybdenum*, a scarce mineral of a peculiar form, and sometimes confounded with plumbago, from which however it is distinguished by its more shining, scaly appearance.

MOLYB'DENUM, in mineralogy, a metal which has not yet been produced in masses of any considerable magnitude, but has been obtained only in small separate globules, of a blackish, brilliant colour. It unites with several of the metals, and forms with them brittle compounds.——The *molybdic acid* has a sharp metallic taste, reddens litmus paper, and forms salts with alkaline bases.

MOMEN'TUM, in mechanics, the power displayed by any body in a certain direction, always measured by the velocity, and increased or diminished by the number of atoms; and, therefore, is as the velocity multiplied by the quantity.

MON'ADE, an atom no longer divisible.

MONADELPH'IA, in botany, the sixteenth class of the Linnæan system of plants, containing eight orders, *triandria, pentandria, octandria, enneandria, decandria, endecandria, dodecandria*, and *polyandria*, with the stamens united into one body by the filaments.

MONAN'DRIA, in botany, the first class of plants, with only one stamen or male part in each flower. The monandria are subdivided into two orders, *monandria-monogynia*, and *monandria-digynia*, according as they contain one or two styles.

MON'ARCHY, a government in which the supreme power is vested in a single person. Where the monarch is invested with an absolute power, the monarchy is termed *despotic:* where the supreme power is virtually in the laws, though the majesty of government and the administration is vested in a single person, it is a *limited* monarchy. It is *hereditary*, where the regal power descends immediately from the possessor to the next heir by blood, as in Great Britain; or *elective*, where the choice depends upon all who enjoy the benefit of freedom, as was formerly the case in Poland.

MON'ASTERY, a convent, or house of religious retirement, for the reception of monks or nuns; and governed by different rules, according to the different regulations prescribed by their founders. Monasteries were first founded in the deserts of Upper Egypt, where Antony, commonly called the *Great*, collected a number of hermits, about the year 305, who, for the sake of enjoying the benefits of retirement from the world in each others' society, built their huts from each other, and performed their devotional exercises in common, as the monks of Palestine did at a later period, and as those of Abyssinia do at the present day. The number of monasteries was much diminished at the time of the Reformation, when the rich estates of the establishments which were deserted by the monks and nuns, in Protestant states, were in part appropriated by the sovereign to his own use, and partly devoted to the founding and supporting of institutions for the purposes of education. In Catholic countries, they retained their original constitution till the 18th century; but from the influence of the spirit of the age, they sank in the public estimation, and were obliged, as the papal power diminished, to submit to many restrictions imposed on them by Catholic princes, or to purchase immunity at a high price.

MON'DAY, the second day of the week, so called from being anciently sacred to the moon.

MONETA'RII, in antiquity, officers of the mint amongst the Romans, who presided over the management of the metal and stamping the coin.

MON'EY, the portable and standard equivalent for commodities, labour, and values transferred. It consists either of coins, or pieces of stamped metal, or of paper money or moneys of account. Among modern commercial nations, gold, silver, and copper are the only metals used for this purpose. Paper money is called paper currency, to distinguish it from specie, metallic currency, or cash: it comprehends notes of hand, bills of exchange, bonds, mortgages, &c. Moneys of account are imaginary moneys, used only in keeping accounts; such was the English pound until sovereigns were coined. When it is plentiful, with reference to commodities and labour, they are said to be dear; but when commodities and labour are plentiful in reference to money, they are said to be cheap; dearness and cheapness being mere relative terms. Money is profitable to a country only by its circulation; for circulation makes money the continually repeated cause of the production of new portions of property; and, on this account, a small sum of money, in constant circulation, is of far more benefit to a country than the possession of the largest sums which remain locked up, and do not change owners. The only true means of permanently preventing a scarcity of money, is to improve the state of internal and domestic industry; and their opinion is wholly destitute of foundation, who believe that a mere plenty of money is sufficient to

THE DISSOLUTION OF MONASTERIES IN ENGLAND WAS AN ACT OF THE STATE. [S S 3

THE FIRST SHILLINGS WERE COINED BY HENRY VIII., AND WERE CALLED TESTOONS: HALF-CROWNS, SIXPENCES, AND THREEPENCES, BY EDWARD VI.

develop a healthy state of domestic industry; for the money does not produce the goods, but follows their production.—In the most ancient times, it is certain, all commerce was managed by way of barter. There was always a necessity, however, for a sort of common measure, by which to estimate the value of commodities. The first inhabitants of the earth were almost all shepherds and husbandmen: they therefore made that common measure to consist of a certain portion of their flocks, which was considered *tanquam pretium eminens:* and any commodity was said to be worth so many sheep, oxen, &c. It was afterwards found more expedient to express the value of most commodities by bits of leather, which by their marks showed the number of beasts they were worth. This was the first money, and the origin of all coins. Silver money was not used at Rome till the 485th year after the building of the city—and gold was first coined in the year 546, during the consulship of Nero and Salinator. Julius Cæsar was the first whose head was stamped upon money, by order of the senate. The first coined money regularly minted, and properly so called amongst the Jews, was in the time of Judas Maccabæus, who had leave given him by Antiochus Sidetes, to coin money of his own in Judea. Payments, before this, had always been made by weight: hence the correspondence between the names of their sums and the names of their weights. The English word money is derived from the Latin *moneta*, which was a name given to money by the Romans, because they kept their silver money in the temple of Juno Moneta.

MON'ITOR, in zoology, a genus of large lizards, which have teeth in both jaws, and none on the palate; most of them have the tail compressed laterally: they derive their name from a popular belief that they give warning of the approach of crocodiles, by making a kind of whistling noise. They are found in most parts of the world, and the fossil remains of species much larger than any now existing, have been discovered in various places in Europe.

MON'ITORY *Letters*, are letters of warning and admonition, sent from an ecclesiastical judge, upon information of scandals and abuses within the cognizance of his court.

MONK, one of a religious society who dwells in a monastery, under a vow of observing the rules of the order he belongs to.

MON'KEY, the general name of the ape, baboon, and simia tribe, the several varieties of which are principally found in the tropical climates. They inhabit forests in prodigious numbers, and, though mischievous and filthy, their manners are fantastical and interesting. They have hands like man, and can walk on two legs, but they practise no arts beyond what are suggested by the necessities of the hour. They are affectionate to their young, and often exhibit great sagacity. Most of the species are gregarious, associating in large troops; but each troop is invariably formed of the same species. They throw missiles with great dexterity, and live on vegetables.——*Monkey*, a machine used for driving large piles of wood.

MONKS'HOOD, or *Aconite*, in botany, a poisonous plant bearing a fine blue flower.

MONO'CEROS, in astronomy, one of the new constellations in the northern hemisphere.

MON'OCHORD, a musical instrument originally having but one string, as its name imports; but it is now generally constructed with two, by means of which the musician is better enabled to try the proportions of sounds and intervals, and judge of the harmony of two tempered notes.

MONOCHROMAT'IC, in optics, presenting rays of light of one colour only.

MON'OCHROME, an ancient mode of painting in which only one colour is used. The most numerous monuments existing of this kind of painting are on terra cotta.

MONOCOTYL'EDON, in botany, a plant with only one cotyledon, or seed-lobe.

MONOC'ULUS, a genus of water insects, of which there are about fifty species in stagnant waters.

MON'ODON, in ichthyology, the sea-unicorn, which has a remarkable tusk or horn projecting from its head. Its usual size is from 16 to 20 feet, and it is sometimes called the *horned narwhal* or *monoceros*.

MONOE'CIA, in botany, the twenty-first class of the Linnæan system of plants, containing eleven orders, *monandria, diandria, triandria, tetrandria, pentandria, hexandria, heptandria, polyandria, monadelphia, syngenesia, gynandria*, with stamens and pistils distinct in the same plant.

MONOG'AMY, the state or condition of those who have only been once married, and are restrained to a single wife.

MON'OGRAM, in archæology, a character or cipher composed of one, two, or more letters interwoven, being an abbreviation of a name; anciently used as a seal, badge, arms, &c. Printers, engravers, &c. formerly made use of monograms to distinguish their works.

MON'OGRAPH, a treatise on a single subject in literature or science.

MONOGYN'IA, in botany, the first order in each of the first thirteen classes in the Linnæan system, comprehending plants that have only one pistil or stigma in a flower.

MONOLITH'IC, consisting of a single stone. Some striking specimens of monolithic temples have been found in Egypt, and bear testimony to the wonderful application of mechanical power among that ancient people.

MON'OLOGUE, a dramatic scene, in which a person appears alone on the stage, and soliloquizes.

MONOMA'NIA, the name given, by some physicians, to that form of mania in which the mind of the patient is absorbed by one idea.

MONO'MIAL, in algebra, a root or quantity that has but one name, or consists of only one member.

MONOPETALOUS, in botany, an epithet applied to flowers that have only one petal or flower-leaf.

MONOPHYLLOUS, in botany, having but one leaf.

MONOPHYSITE, one who maintains that Jesus Christ had but one nature, or that the human and the divine nature were so united as to form one nature only.

MONOPOLY, an exclusive right, secured to one or more persons, to carry on some branch of trade or manufacture; or the sole power of vending any species of goods, obtained either by engrossing the articles in market by purchase, or by a license from the government. The most frequent monopolies formerly granted, were the right of trading to certain foreign countries, the right of importing or exporting certain articles, and that of exercising particular arts or trades. This at length became an enormous grievance, and was abolished by an act of parliament in 1624, which act did more, perhaps, to excite a spirit of invention and industry, and to accelerate the progress of wealth, than any other law in existence. There is, however, one species of monopoly, sanctioned by the laws of all countries that have made any advances in the arts—the exclusive right of an invention or improvement for a limited number of years.

MONOTHEISM, the doctrine or belief of the existence of one God only: opposed to *polytheism*, or a plurality of gods. All the different mythologies have, among the host of gods with which they people heaven and earth, some supreme God, more or less defined, but, in every case, distinguished above the others. And in every instance we see, in these mythologies, the gods gradually multiplied, as man departed farther and farther from the simple and original revelation, till lost in the multitude of deified personifications which he himself had created.

MONOTONE, in rhetoric, a sameness of sound, or the utterance of successive syllables on one unvaried key, without inflection or cadence.

MONSOONS, periodical winds in the Indian sea, that blow one half the year from the same quarter or point of the compass, and the other half from the opposite point. The change of the winds, or the breaking up of the monsoons, as it is called, is accompanied by storms and hurricanes. The points and times of shifting are different in different parts of the ocean. The monsoons which prevail in the East-Indies are called *trade winds;* and so are the winds which blow the whole year from the same point, as the winds within the tropics on the Atlantic.

MONSTER, in physiology, any creature whose formation deviates in some remarkable way from what is natural to the species; sometimes in a malformation of the whole or some portion of the system, and sometimes in the presence of organs or parts not necessary thereto.

MONTEM, a singular celebration which takes place at Eton on Whit-Tuesday every third year. The scholars of the college march in procession to Salt-hill, where their captain (the best scholar) recites a passage from some ancient author. The young gentlemen, called *salt-bearers*, who are arrayed in fancy dresses, then disperse in various directions, to collect money from all passengers, not allowing any one to pass without giving some thing. The money thus collected, which usually amounts to several hundred pounds, is given to the captain, to enable him to take up his residence at one of the universities. The royal family and a splendid company generally attend the ceremony.

MONTH, in chronology, the twelfth part of a year, otherwise called a *calendar* month, to distinguish it from the astronomical month, which is either solar or lunar. A *solar month*, or the time in which the sun passes through a whole sign of the zodiac, is 30 days, 10 hours, 29 minutes, 5 seconds; a *lunar month*, or the period of one lunation, is 29 days, 12 hours, 44 minutes, 3 seconds. The Romans used lunar months, and made them alternately of 29 and 30 days; and they marked the days of each month by three terms, viz. *calends*, *nones*, and *ides*. A *civil* or *common* month consists of a certain number of days, according to the laws and customs of the different countries wherein it is used, either having no regard to the solar or lunar months, as those of the Egyptians in their equal year, of the Romans in the year of Romulus, &c., or coming pretty near to the solar astronomical month, as the Julian.—In the year there are twelve solar months, and thirteen lunar months. In popular language, four weeks are called a month, being nearly the length of the lunar month.

MONTMARTRITE, in mineralogy, a compound of the sulphate and carbonate of lime, existing as a mineral of a yellowish colour, found at Montmartre, near Paris.

MONUMENT, in architecture, a building or erection of any kind, destined to preserve the memory or achievements of the person who raised it, or for whom it was raised; as a triumphal arch, a mausoleum, a pyramid, a pillar, a tomb, &c.—*The Monument*, so called among us, is a magnificent pillar, erected to preserve the memory of the great conflagration of the city of London, in 1666, on the spot where the fire began. This pillar is of Portland stone, of the Doric order, and fluted. It is one of the boldest pieces of architecture ever attempted, being 202 feet high, and 15 feet in diameter. It stands on a pedestal 40 feet high, and 21 feet square, the front being enriched with curious emblems in basso relievo; and within its shaft is a spiral stair of black marble of 345 steps. It was begun in 1671, but was not completed till 1677; stone being scarce, and the restoration of London and its cathedral swallowing up the produce of the quarries. Mr. Elmes, in his Life of Sir Christopher Wren, the architect, tells us that the Monument was "at first used by the members of the Royal Society for astronomical experiments, but was

THE HISTORY OF THE HEBREWS AFFORDS THE MOST STRIKING INSTANCE OF THE PRESERVATION OF MONOTHEISM AMID THE CORRUPTIONS OF PAGANISM.

THE MONOPOLIZER THE STAPLE COMMODITIES OF A COUNTRY, IT IS THEREFORE ARISING TO REDUCE IT AS MONOPOLIZE THE STAPLE COMMODITIES OF A COUNTRY; IT IS THEREFORE ABSURD TO EXPECT IT.

abandoned on account of its *vibrations* being too great for the nicety required in their observations. This occasioned a report that it was unsafe; but its scientific construction may bid defiance to the attacks of all but earthquakes for centuries."

MOOD (sometimes written *mode*), in grammar, the manner of forming a verb, or the manner of the verb's inflections, so as to express the different forms and manners of the action, or the different intentions of the speaker.

MOON, in astronomy, a secondary planet, or satellite of the earth, whose borrowed light is reflected to the earth, and serves to dispel the darkness of night. The moon and earth are acted upon by the sun as one body, and each moves round the centre of the sun's action. Like the other heavenly bodies, she daily alters her apparent position among the fixed stars, and, in the course of a month, appears to make a complete revolution round the heavens, from west to east, while, at the same time, she has, like the fixed stars, an apparent daily motion from east to west. Amongst all the heavenly bodies, the moon is the nearest to us; the mean distance being estimated at about thirty times the diameter of the terrestrial equator, or 237,000 miles. Her sidereal or periodical motion on her own axis is performed in 27 days, 7 hours, 43 minutes, and 11 seconds; her synodical motion, or her motion in her orbit round the earth, is performed in 29 days, 12 hours, 44 minutes, 12 seconds: the former is called the *periodical*, and the latter the *synodical month*. But since this motion about the axis is equable and uniform, and that about the earth, or common centre of gravity, is unequal and irregular, as being performed in an ellipsis, it must follow that the same part of the moon's surface, precisely, can never be shown constantly to the earth; and this is confirmed by the telescope, through which we often observe a little gore or segment on the eastern and western limbs appear and disappear by turns, as if her body librated to and fro; which therefore occasioned this phænomenon to be called the moon's libration. With regard to the moon's surface, that she has variety of hills and mountains is demonstrable from the line which bounds the light and dark parts not being an even regular curve, as it would be upon a smooth spherical surface, but an irregular broken line, full of indentations; for, we observe many small spots interspersed all over the bright part, some of which have their dark sides next the sun, and their opposite sides very bright and circular, which infallibly proves them to be deep, hollow, round cavities; of which there are two very remarkable ones near together on the upper part, and may be viewed exceedingly plain, when the moon is about four or five days old. The depth of these lunar cavities prodigiously exceeds the height of the mountains, and consequently the surface of the moon has but little resemblance to that of the earth in these respects. The numerous observations of Herschel and Schroter, through a number of years, have put the existence of these beyond dispute: Schroter has even undertaken to determine the elevation of mountains in the moon. The two heights on the southern limb which he called *Leibnitz* and *Dorfel*, he measured by means of the shade which they cast, knowing, at the same time, the sun's elevation with regard to them, and found them to be 26,650 feet high.——The various appearances which the moon periodically presents in the different parts of its revolution, are termed *phases*, and arise from the different positions which its opaque mass assumes in relation to the sun and the earth. When the moon is between the sun and the earth (in which case the sun and moon are said to be in conjunction), she presents her unillumined side to us, and we can see nothing of it. In this state it is called the *new moon*. Four days after the time of new moon, it has receded 45° from the sun; and now a portion of the illumined surface is seen in the shape of a sickle, with the horns towards the sun. After about eight days, it has departed 90° from the sun, and shows a bright semi-circular disk: in this state the moon is said to be in her *first quarter*. The moon now assumes more and more of a circular figure, until, about fifteen days after the time of new moon, when it stands directly opposite the sun, it presents a complete circular disk: this is the *full moon*, rising when the sun sets, and shining through the whole night. From the day of full moon it decreases with each successive day, on the side most distant from the sun, as it is now approaching that luminary at the same rate as it before departed, gradually assuming the sickle shape, with the horns, however, turned from the sun.—The new moons or first days of every month, were kept as festivals amongst the Jews; and they were celebrated with sound of trumpets, entertainments, and sacrifice. We know also that the full moon was held favourable for any undertakings by the Spartans: and no motive could induce them to enter upon an expedition, march an army, or attack an enemy till the full of the moon. —The moon was supposed, both by Greeks and Romans, to preside over childbirth.

To the foregoing notice of our satellite, we subjoin the following article, which has both novelty and interest to recommend it, and for which we are indebted to the columns of the *Athenæum*:—"*Geology of the Moon.*—Captain Portlock, president of the Geological Society of Dublin, being of opinion that information as to the original condition of the surface of the earth might be obtained by an inquiry into the condition of some other planetary body, wrote to Dr. Robinson, of Armagh, on the subject; the following is the Doctor's interesting reply—

'Feb. 7, 1839. Observatory, Armagh.

'My dear Sir,—My general notion is that you are quite right in referring to the moon as evidence of the absence of *weathering*. The sharpness of its rocks and peaks is quite surprising; for every angle and edge

stick out with a ruggedness that is, perhaps, the thing which first strikes an observer with a sense of the wide difference between that globe and the earth. It alone would show that air and water are absent, had we no other evidence. But you are, I think, in error, when you infer from the great height of lunar mountains, the probable *quantity* of the wearing down which our earthly peaks have suffered. The moon has less attractive force than belongs to our planet, so that the same elevating force would do about twenty times as much work; and there is every reason to believe that the elevating forces were far more energetic. Indeed, I regard the appearance of the moon as strong presumption against Mr. Lyell's notion, that the energy of volcanic action is as powerful now as it was in the primeval epochs of our planet. No volcanic action is now at work in the moon; but we see that it was once raging with uncontrollable fury, and on the most prodigious scale. *There*, it has actually worn itself out; here, I think, we may assume that it has merely expended most of its force. I may here tell you of some of the matter which I see, or think I see, on the surface of our satellite. The mountains of earthly shape are some pretty high, the highest peak of the said Apennines being, according to the best authority, something under 17,000 feet above the plains from which it rises; but this is a rare instance, and very few reach 6,000. They are of astonishing steepness. But the Ring mountains, or craters, are much stranger affairs. Take, for instance, Tycho, that bright spot in the south-east quarter, from which the rays seem to run. It is fifty miles in diameter, and 16,000 feet deep, surrounded by broad terraces within, and with a central mountain about 5,000 feet high. Some of the lunar mountains are 200 miles diameter, and one nearly of this size, 22,000 feet deep. What a paroxysm it must have been that hollowed out this monstrous crater! Observe that *all* these craters are depressed below the lunar surface, the elevation of their walls above it being in general but half their depth below it; and the question is, what became of the immense quantity of materials that must have been blown out of them. Schroter thought that the walls, if demolished, would fill the cavities; but this (in Tycho, for instance) is certainly not always the case, and we do not recognize heaps of debris in the vicinity. But we do find a curious appearance sometimes —those rays to which I have already alluded as diverging from particular craters. They are peculiarly bright, but not at all elevated above the lunar surface, and give the idea of a fluid which had run out in currents, and produced some chemical change in the soil over which it passed. As these rays are themselves bristled with craters, these latter must have been of subsequent formation. The long lines terminating in those dusky places which we sometimes hear called seas, have perchance been rivers; but as they generally seem to originate in some *crater*, they were more probably the track of volcanic fluids, which, however, must have been quite different from our lavas, and, perhaps, have played some part in the absorption of the lunar atmosphere, and the removal of its seas. In general the large craters are far more brilliant than the other parts of the moon, and the comparative obscurity of the *seas* arises from the scarcity of volcanic action there. On earth, I believe, our present volcanic products are but little reflective; it is otherwise there; but it may be remarked, that the small craters, which subsequently broke out on the greater and older ones, are much less bright, as if the expiring action had been more analogous to that of our own planet. But this at least is clear, that since the invention of the telescope the moon has been undisturbed.'"

MOON'STONE, in mineralogy, a variety of *adularia*, of a white yellowish, or greenish white colour, and somewhat irridescent, found in blunt amorphous masses, or crystalized in truncated rhomboidal prisms.

MOOR, a native of the northern coast of Africa, called by the Romans, from the colour of the people, *Mauritania*. It embraces the present countries of Morocco, Algiers, Tunis, &c.——*Moor*, an unlimited tract of land, usually overrun with heath and full of bogs.

MOOR'-BUZZARD, in ornithology, the yellow-legged falcon, with an iron-coloured body, and yellow head. It is about the size of a crow, and has its name from building its nest in moorish and boggy places.

MOOR'-COCK, in ornithology, a species of *Tetrao*, with a forked tail, spotted with white underneath. It is a native of England, but very rare: the male is throughout of a very deep iron gray, but the female is variegated with transverse lines of black.

MOOR'INGS, the anchors, chains, &c. laid athwart the bottom of a river or harbour to confine a ship.

MOOR'STONE, in mineralogy, a species of granite.

MOOSE, or the American Elk, an animal of the genus *Cervus*, and the largest of the deer kind, growing sometimes to the height of seventeen hands. It has palmated horns, short thick neck, an upright mane of a light brown colour, small eyes, and very long pendent ears.

MOOT'-CASE, or MOOT'-POINT, an unsettled point or question to be mooted or debated.

MORAL'ITY, the duties of men in their social character; or that rule of conduct which promotes the happiness of others, and renders their welfare accordant with our own. This implies, that our acts must proceed from a motive of obedience to the divine will.——The term *moralities* was given to a kind of allegorical plays, formerly in vogue, and which consisted of moral discourses in praise of virtue and condemnation of vice. They were occasionally exhibited as late as the reign of Henry VIII., and, after various modifications, assumed the form of the *masque*,

FROM THE OBSERVATIONS THAT HAVE BEEN MADE, IT WOULD SEEM THAT THE SURFACE OF THE MOON IS STILL SUBJECT TO GREAT REVOLUTIONS.

THE END OF PHILOSOPHY IS THE ATTAINMENT OF HAPPINESS, AND THE MEANS IT EMPLOYS ARE RULES FOR VIRTUOUS CONDUCT.

which became a favourite entertainment at the court of Elizabeth and her successor.

MOR'ALS, the practice of the duties of life. While civil institutions have regulated the conduct of man in society, religious institutions have penetrated into the sanctuary of conscience. Moral and religious sentiments are developed almost spontaneously, and have a natural sympathy; Christianity having blended them in the precepts of love to God and man. In considering what the moral law enjoins, we soon perceive that there are degrees in our duties. Just as actions may differ in criminality, so may they also differ in merit; and the degree in both cases will depend upon accompanying circumstances; and circumstances are often such as to make it difficult to determine on which side the balance of duty predominates. But though man is often driven to choose between conflicting duties, he is never obliged to choose between two criminal acts.—Moral duties have been distinguished into three great classes: duties to God, to our fellow-men, and to ourselves; but though they may be classified, they are not to be separated. Duties to God comprise, essentially, all our obligations; and when we serve other men, we, in fact, labour for ourselves; so, too, in improving ourselves, we are qualifying ourselves to render the highest service to others.—Practical morality exerts a powerful influence on civilized life, strengthening the ties which unite individuals, fortifying the respect for equity and benevolence, encouraging labour, and assuring its reward by protecting property, favouring the progress of intelligence by nourishing the love of truth, and improving taste by purifying and elevating the sentiment of the beautiful. Civilization, in its turn, promotes practical morality. The closer and more varied the relations among men become, the more sensible do they grow to their mutual duties; while the progress of science aids virtue, by enlightening the mind, and accustoming it to noble and refined pleasures.

MORA'VIANS, otherwise called HERNHUTTERS, or UNITED BRETHREN, a sect of Christians, among whom social polity makes a figure as conspicuous, at least, as religious doctrine. The society of the United Brethren sprung up in Moravia and Bohemia, on the first opening of that reformation which stripped the chair of St. Peter of so many votaries, and gave birth to so many denominations of Christians. Generally speaking, these sectaries adhere to the *Augsburgh Confession*. From the original seat of their doctrine, they are sometimes called *Moravians*; and from a settlement made in Upper Lusatia, about fifty miles eastward of Dresden, they are generally known, on the continent, by the name of *Hernhutters*. Some persecuted brethren having emigrated from Moravia, were received by Nicholas Lewis, count of Zinzendorf, on whose estate they built a town. The ground allotted to them for this purpose was on the side of a hill called *Hutburg*, or *Watch-hill*; whence they took occasion to call their new settlement, *Hernhut*, "The watch of the Lord." The United Brethren are much attached to instrumental as well as vocal music; celebrate agapæ or love feasts; and cast lots, to discover the will of the Lord. These people live in communities, and provide for their poor; but do not make a common stock of their property. They wear a plain, uniform dress, and are extremely methodical in all their concerns.

MOR'BID, among physicians signifies diseased or corrupt, a term applied either to an unsound constitution, or to those parts or humours that are infected by a disease.

MOR'DANT, in dyeing and calico printing, a substance which has a chemical affinity for colouring matter, and serves to fix colours; such as alum. When that which has to be dyed has little or no attraction to the matter on which the colour depends, so as either not to be capable of abstracting it from its solvent, or of retaining it with such force as to form a permanent dye, then some intermediate substance is used, which is capable of uniting them; and such a substance is called a *mordant*. In order properly to appreciate the utility and the true functions of mordants, we must bear in mind that colouring matters are peculiar compounds possessed of certain affinities, their distinctive characters being not to be either acid or alkaline, and yet to be capable of combining with many bodies, and especially with salifiable bases, and of receiving from each of them modifications in their colour, solubility, and alterability. Organic colouring substances, when pure, have a very energetic attraction for certain bodies, feeble for others, and none at all for some. Of all the bases, those which succeed best as mordants are alumina, tin, and oxyde of iron.

MORES'QUE, or MORESK', a kind of painting or carving done after the Moorish manner, consisting of grotesque pieces and compartments promiscuously interspersed.

MOROC'CO, a fine kind of leather, prepared from the skin of the goat, originally brought from the Levant and the Barbary States, but now manufactured in most other countries.

MOROX'YLIC ACID, in chemistry, an acid produced from the trunk of a white mulberry tree, found at Palermo, on which it formed a dark brown coating.

MOR'PHIA, in chemistry, an alkali extracted from opium, of which it constitutes the narcotic principle. With acids it forms a class of salts, in like manner as do the other vegetable alkalies. Morphia acts with great energy on the animal economy.

MORPHOL'OGY, the science which treats of the formation and change of organic bodies.

MOR'RIS-DANCE, (from *Morisco*, Moorish), a dance derived from the Moriscoes in Spain, which was formerly danced at May-games, revels, &c. in England, and an imitation of which, under the same name, is

WHENEVER A "MORDANT" IS ITSELF COLOURED, IT WILL CAUSE THE DYE TO TAKE A COMPOUND COLOUR QUITE DIFFERENT FROM ITS OWN.

still occasionally practised by young men in their shirts, with ribbons tied round the arms and flung across the shoulders. In the reigns of Henry VII. and VIII. it was a principal feature in the popular festivals.

MORSE, in zoology, the sea-horse or walrus, an animal of the genus *Trichechus*, which sometimes grows to the length of 18 feet. These animals are gregarious, but shy, and very fierce when attacked. They inhabit the shores of Spitzbergen, Hudson's Bay, and other places in high northern latitudes.

MORTAL'ITY, *Bills of*, registers of the number of deaths or burials in any parish or district. These were established at the time when the plague made great ravages in London; and they have been continued, from the convenience found in ascertaining by them the precise time of the birth or death of individuals, and for the information they furnish respecting the rate of human mortality.

MORTAR, a short piece of ordnance, thick and wide; used for throwing shells, bombs, carcasses, &c. The use of mortars is thought to be older than that of cannon, as they were employed in the wars in Italy to throw stones and balls of red-hot iron and stones, long before the invention of bombs.——*Mortar*, a preparation of lime and sand mixed up with water, which serves as a cement, and is used by masons and bricklayers in buildings.

MORTGAGE, in law, the conveyance or transfer of a real or personal estate in fee as security for the payment of money, and on the condition that if the money shall be paid according to the contract, the transfer shall be void, and the mortgagee shall reconvey the estate to the mortgager. The creditor, who holds the estate according to the condition of the deed, is called the mortgagee; but the mortgager, who is the person that makes the mortgage, generally keeps possession of the land till failure is made in the payment of the mortgage-money; in which case, though the mortgagee enters for non-payment, the mortgager has a right to the *equity of redemption* in the court of chancery, where he may call the mortgagee to an account for the profits of the land mortgaged.

MORTIFICA'TION, in medicine and surgery, the death of one part of the body while the rest continues alive, and often in a sound state. Mortification is called *gangrene* and *sphacelus*, when occurring in soft or fleshy parts, as in the stomach or the limbs; and *caries* when in a bone, as in the spine, the skull, &c.

MORTISE, in carpentry, a kind of joint consisting of a hole of a certain depth cut in a piece of timber so as to receive another piece called the tenon.

MORTMAIN, in law, an alienation of lands and tenements to any guild, corporation, or fraternity, and their successors. Lands alienated in mortmain are different from others, for they never revert to the donor, or to any temporal or common use; on which account, by such alienation, the lords lose their escheats, and many services that were formerly due to them; as bodies politic never die, nor can perform personal service, nor commit treason, or felony.

MORTUA'LIUM, in antiquity, the vestments and every thing else which appertains to the dead.

MO'RUS, in botany, a genus of plants, class 21 *Monoecia*, order 4 *Tetrandria*; consisting of different species of mulberry trees.

MO'RUN, in medicine, an excrescence on the skin resembling a mulberry.

MOSA'IC, or *Mosaic work*, small fragments of glass, marble, precious stones, &c. of various colours, cut square, and cemented on a ground of stucco, in such a manner as to imitate the colours and gradations of painting. The beautiful chapel of St. Lawrence in Florence, which contains the tombs of the Medici, has been greatly admired by artists on account of the vast multitude of precious marbles, jaspers, agates, &c., applied in mosaic upon its walls.——*Mosaic*, pertaining to Moses, the leader of the Israelites; as, the *Mosaic* law, &c.

MOSA'IC GOLD, the *aurum musivum* of the old chemists, is a sulphuret of tin: but the composition now called *mosaic gold* or *or-molu*, is a peculiar alloy of copper and zinc, melted at the lowest temperature at which copper will fuse.

MOSQUE, a Mahometan temple, or place of religious worship. All mosques are square buildings, generally constructed of stone, in the Moresque or Saracenic style of architecture. Before the chief-gate is a square court paved with white marble, and surrounded with a low gallery whose roof is supported by marble pillars. In these galleries the Turks wash themselves before they enter the mosque. As it is not lawful to enter the mosque with shoes or stockings on, the pavements are covered with pieces of stuff sewed together, each being wide enough to hold a row of men kneeling, sitting, or prostrate. The women are not allowed to enter the mosque, but stay in the porches without. About every mosque there are six high towers, called minarets, each of which has three little open galleries, one above another: these towers, as well as the mosques, are covered with lead, and adorned with gilding and other ornaments; and from thence, instead of a bell, the people are called to prayer by certain officers appointed for that purpose. The mosques of the Arabs often include, in a quadrangular area, an immense quantity of columns ranged in files, the multiplicity and extent of which impress the mind of the beholder with surprise and admiration. These columns are, in numerous instances, the rich spoils of antique monuments.

MOSSES *(musci)*, in botany, a very numerous order of plants, belonging to the *cryptogamia* class, the fructification of which is but little understood. Linnæus, indeed, has attempted to arrange them according to what he takes to be the signs of fecundation, many of which he ac-

MOSAIC WORK PROBABLY ORIGINATED IN THE EAST, BUT RECEIVED ITS PERFECTION FROM THE GREEKS, AND WAS COMMON WITH THE ROMANS.

knowledges to be wanting. Hence, in the description of such imperfect plants, it becomes necessary to distinguish them according to their general habit and structure. They consist of little herbaceous plants, having simple or branching stems, which are furnished with very numerous and more or less imbricated leaves: these are always continuous with the stem, and never fall off. Water is absorbed by the leaves very rapidly, and when a dried moss is dipt in water, it very soon resumes the freshness and appearance of life. The internal structure of mosses is entirely cellular. Mosses are found in cool, airy, and moist situations, in woods, upon the trunks of trees, on old walls, the roofs of houses, &c. Some of them are entirely aquatic. About 800 species are known.

MOS'CHUS, in zoology, a genus of animals, class *Mammalia*, order *Pecora*. [See MUSK.]

MOTACIL'LA, in ornithology, a numerous genus of birds, of the order *Passeres*, distinguished by a straight beak of a subulated figure, and a lacerated tongue. To this genus belong the common wagtail, the wheat-ear, nightingale, red-start, wren, &c.

MO'TET (from the French), a musical composition; some sacred subject, such as a hymn, psalm, or a small portion of Scripture. Some are set for several voices, and others are accompanied by instrumental music.

MOTH, in entomology, an insect classed by Linnæus in the genus *Phalæna*, which breeds in woollen, yarn and fur; and in its caterpillar state doing great injury by eating the substance, and destroying the texture of our garments, &c.

MOTH'ER, the female parent, to whose care, tenderness, and personal sacrifices, children are indebted for their existence through the helpless state of infancy, and for all their early education and welfare; and to whom, as their devoted friend, they ought always to display unabated affection, gratitude, and sympathy.——*Mother* is also used figuratively, to denote whatever gives origin to other things of the same kind: thus we say a *mother-church*, a *mother-tongue*, &c. ——A thick slimy substance concreted in liquors, particularly in vinegar, very different from scum or common lees.——*Mother-water*, a fluid remaining after the evaporation of salt water, and containing deliquescent salts and impurities.

MOTHER OF PEARL, a beautiful white enamel, or animal gluten, which, with alternate strata of carbonate of lime, forms the shell of the pearl fish.

MOTION, the continued and successive change of place. There are three general laws of motion. 1. That a body always perseveres in its state of rest, or of uniform motion in a right line, till by some external force it be made to change its state: for as a body is passive in receiving its motion, and the direction of its motion, so it retains them, or perseveres in them without any change, till it be acted on by something external. 2. That the change of motion is proportional to the force impressed, and is produced in the right line in which that force acts. 3. That action and re-action are equal with opposite directions, and are always to be estimated in the same right line.—All motion is in itself absolute, or the change of absolute space; but, when the motions of bodies are considered and compared with each other, then are they relative and apparent only: they are relative, as they are compared to each other, and they are apparent only, insomuch that not their true or absolute motion, but the sum or difference of the motions only is perceivable to us. Motion, once begun, would be continued for ever, were it to meet with no interruption from external causes, such as the power of gravity, the resistance of the medium, &c.——*Equable motion* is generated by a single impetus or stroke; thus the motion of a ball from a cannon is produced by the single action of the powder in the first moment, and, therefore, the velocity it first sets out with would always continue the same were it void of gravity, and to move in an unresisting medium, which, therefore, would be always equable, or such as would carry it through the same length of space in every equal part of time.——*Accelerated motion* is produced by a constant impulse of power which keeps continually acting upon the body, as that of gravity which produces the motion of falling bodies, which sort of motion is constantly accelerated, because gravity every moment adds a new impulse which generates a new degree of velocity; and, the velocity thus increasing, the motion must be quickened each moment, or fall faster and faster the lower it falls. In like manner a body thrown perpendicularly upward, as a ball from a cannon, will have its motion continually retarded, because gravity acts constantly upon it in a direction contrary to that given it by the powder, so that its velocity upwards must be continually diminished, and its motion as continually retarded, till at last it be all destroyed. The body has then attained its utmost height, and is for a moment motionless, after which it begins to descend with a velocity in the same manner accelerated, till it comes to the earth's surface.——*Perpetual motion* is that which is effected or supplied by itself, without the impulse or intervention of any external cause. Hitherto it has been found impossible to invent a machine that has this principle.——Many interesting illustrations of motion, variously applied, will naturally suggest themselves to the reader. With regard to the *transference of motion* from one body to another, the action of the billiard ball affords a ready and well-known example: we see the ball that has been struck by the player, on its striking another ball suddenly stop, and the second ball proceeds with the same degree of velocity which the first had; the action which imparts the new motion being equal to the reaction which destroys the old. Although the transference of motion, in such a case, seems to be instantaneous, the change is

really progressive, and is as follows: The approaching ball, at a certain point of time, has just given half of its motion to the other equal ball; and if both were of soft clay, they would then proceed together with half the original velocity; but, as they are elastic, the touching parts at the moment supposed, are compressed like a spring between the balls; and by their expanding, and exerting force equally both ways, they double the velocity of the foremost ball, and destroy altogether the motion in the other.—The following appears more extraordinary; but it is not the less true:—A cannon or musket ball, shot quite horizontally, will touch the ground of a level plane just as soon as another ball dropped at the same instant directly from the cannon's mouth. The simple fact is, that the forward or projectile motion does not at all interfere with the action of gravity. This fact, which most persons, before consideration, would be disposed to doubt, makes strikingly sensible the extraordinary speed of a cannon ball; *viz.* which has already carried it 600 or 800 feet before touching, during the half second that a ball dropped from the hand of a standing person requires to reach the earth. This fact also explains why, for a long range, the gun must always be pointed more or less upwards.—*Dr. Arnott's Elements of Physic.*

MOTION, in law, an application in court, either by the parties themselves or their counsel, in order to obtain some order or rule of court.——In parliament or any other public assembly, the proposing of any matter for the consideration of those present; as, "the honourable member made a motion to the following effect," &c.

MOTIVE POWER, in mechanics, the whole power or force acting upon any body, or quantity of matter, by which it is put in motion.

MOT'MOT, in ornithology, a beautiful South American bird, about the size of a jay, with a long tail, the two middle feathers of which are destitute of vanes for about an inch, at a small distance from the extremity. They are very shy and timid, and if taken when old, invariably refuse all kinds of food. Their usual places of resort are the depths of large forests, and they build their nests in the ground. The principal species are the blue-headed motmot *(prionites momota)* and the red-headed *(p. dombey)*.

MOT'TO, a sentence or phrase prefixed to an essay or discourse, containing something analogous to the subject of it.—— In heraldry, a word or short sentence put to an emblem or device, or to a coat of arms in a scroll at the bottom of the escutcheon.

MOULD'INGS, in architecture, certain projections beyond the bare wall, column, &c., an assemblage of which forms a cornice, or other decoration.

MOUND, in fortification, any thing raised, as a bank of earth, &c. to fortify or defend a place.——*Mound*, in heraldry, a ball or globe with a cross upon it, such as our monarchs are usually drawn with, holding it in the left hand, as they do the sceptre in the right.

MOU'LINE, in mechanics, a roller which, being crossed with two levers, is usually applied to cranes, capstans, &c. for the purpose of heaving stones, &c.

MOUNT, an eminence or elevation of earth, indefinite in height or size, and may be a hill, a hillock, or a mountain. It is applied in Scripture to the small hillocks on which sacrifice was offered, as well as to Mount Sinai, the Mount of Olives, &c.

MOUNT'AIN ASH, an ornamental tree, which in its leaf resembles the common ash, but it bears a clustered flower, the odour of which is powerful, and which is succeeded by beautiful red berries.

MOUN'TAINS, the largest elevations or eminences on the surface of the globe, consisting of a mass of earth and rock, but of no definite altitude. They are composed of primitive rocks, as granite, trap, and porphyry, other rocks and earth being subsequent formations. The principal ridges are the Andes, in South America, from three to five miles high; the Himalayas, in North Hindostan, of equal height; the Alps, in Switzerland; the mountains of Caucasus and Thibet, in Asia; the Mountains of the Moon (as they are oddly named), in Africa; those of Norway; the Pyrenees, in Spain; the Welsh and Scotch mountains, &c. In North and South America one unbroken chain of mountains runs in a northerly and southerly direction for 8000 miles near the western side of that vast continent, and, with some minor divisions, has evidently determined the general outline of both countries. The action of air, water, and volcanic fires, waste and level these ridges; and, under different circumstances, their debris, or ruins, form, by successive operations, all varieties of earths and soils. Countries covered with high mountains present, in the summer, different climates at different elevations, within a very narrow compass. We may ascend gradually from flourishing and delightful valleys, decorated with corn, fruit-trees, and vines, to pastures covered with odoriferous Alpine plants, and perceive the vegetation diminishing and dwindling as we advance, till, at last, organic life ceases, and the cold prevents all further progress.——We may here observe, that inequalities of surface appertain to other planetary bodies, as appears by viewing the Moon and Venus through a telescope.

MOUNT'ING, in the mechanic arts, is any thing that serves to raise or set off a work; thus, the frame and its ornaments make the mounting of a looking-glass; the hilt, the mounting of a sword, &c.—— *Mounting*, in military affairs, signifies going upon duty: thus, *mounting a breach*, is running up to it; and *mounting guard*, is going upon guard; but *mounting a cannon, mortar*, &c. is the setting it properly on its carriage.

MOURN'ING, the dress or customary habit worn by bereaved survivors. The colours of the dress or habit worn as

badges of grief are different in different countries. In Europe, the ordinary colour for mourning is black; in China it is white, a colour used for mourning by the ancient Spartan and Roman ladies; in Turkey it is blue or violet; in Egypt, yellow; in Ethiopia, brown; and kings and cardinals mourn in purple. Some have attempted to trace the associations by which the colours acquired their character, to natural causes. Thus black, which is the privation of light, is supposed to denote the privation of life; white is an emblem of purity; yellow is the colour of leaves when they fall, and represents that death is the end of all human hopes; brown denotes the earth, to which the dead return; blue is an emblem of the happiness which it is hoped the deceased enjoys; and purple, or violet, is supposed to express a mixture of sorrow and hope. Among the ancients, as among the moderns, public mournings were common on the death of a distinguished public benefactor; and with the Greeks and Romans, it was the custom, during the term prescribed for mourning, to lay aside all ornaments of dress, to abstain from the bath, and other indulgences.

MOUSE, in zoology, a small animal of the genus *Mus*, that haunts houses and fields. It is nearly allied to the rat, and is classed with it in the Linnæan system. Field mice are frequently white.

MOU'SE-EAR, in botany, a plant of the genus *Cerastium*, very similar to chickweed, but the flower is larger, and the fruit shaped like an ox's horn, open at the top.

MOUTH, in anatomy, a cavity or aperture in the head of any animal, at which the food is received, the voice uttered, and the inspiration and expiration of the air is performed. In a more general sense, the mouth consists of the lips, the gums, the insides of the cheeks, the palate, the salival glands, the uvula, and tonsils.——Also the aperture of many other things, so called from the similarity of situation or use; as the mouth of a cannon, where the powder and ball go in and out; the mouth of a river, where the water passes in and out; the mouth of a vessel, &c.

MO'VEMENT, in military affairs, the regular orderly motion of an army for some particular purpose.——In music, the progress of sounds from grave to acute, or from acute to grave.

MU'CIC ACID, in chemistry, an acid generally known by the name of *saccholactic acid*, because it was obtained from sugar or milk; but all the gums appear equally to afford it.

MU'CILAGE, in chemistry, a viscous substance of sufficient consistence to hold together; as a solution of gum or any tenacious liquid, or a lubricous extraction from the roots and other parts of vegetables.——*Mucilaginous glands*, in anatomy, glandules or kernels about the joints, that separate the slimy matter necessary for their lubrication.

MU'CRO COR'DIS, in anatomy, the lower pointed end of the heart.

MU'CRONATE, in botany, an epithet for a sharp-pointed leaf terminating like a dagger.

MU'CUS, a viscid fluid in the animal body, secreted by the mucous membrane, which it serves to moisten and defend. It covers the lining membranes of all the cavities which open externally, such as those of the mouth, nose, lungs, intestinal canal, urinary passages, &c. It is transparent, glutinous, thready, and of a salt flavour, perfectly distinct from gelatine and vegetable mucus.——*Mucous fever*, a term frequently used by medical writers, to express those fevers, in which nature is endeavouring to rid herself of an abundance of pituitous, mucous, and serous matter.

MUEZ'ZIN, or MUED'DIN, among the Mahometans, the crier who announces the hours of prayer from the minaret, and reminds the faithful of their duty.

MUF'TI, the chief priest among the Mussulmen, appointed by the grand seignior himself. He is the oracle in all doubtful questions of their law.

MUGGLETO'NIANS, a religious sect which arose in England, about the year 1657; so denominated from their leader Ludowic Muggleton, a tailor, who with his associate Reeves, asserted that they were the two last witnesses of God mentioned in the Revelations.

MULAT'TO, the offspring of a black man and white woman, and *vice versâ*. The mulatto is of a deep tawny or yellow colour, with frizzled or woolly hair, and resembles the European more than the African. The descendants of Europeans and Indians are called *mestizos*.

MUL'BERRY, the fruit of a large spreading tree, resembling the raspberry in its seedy make, but is much larger. The white mulberry (*murus alba*) is cultivated in France and Italy for its leaves to feed silkworms, but the Persians make use of the common black mulberry (*murus nigra*) for this purpose. The red mulberry (*murus rubra*) is one of the most valuable of American trees, from the properties of the wood. It grows to the height of 60 feet and upwards, with a trunk six feet in circumference. The wood is fine-grained, compact, strong, and solid; and is used for knees, floor-timbers, &c. in ships, as well as for many other purposes where strength and durability are necessary.

MULCH, a term used by gardeners for rotten dung, or the like, thrown upon beds of young plants, to preserve them from the bad effects of cold or drought.

MULE, in zoology, a mongrel kind of quadruped, usually generated between an ass and a mare, and sometimes between a horse and a she-ass; but the latter is every way inferior to the former. They are hardy, sure-footed animals; and in the mountainous parts of Spain and Italy, they are far more useful than horses, being capable of carrying equally heavy burdens, and enduring long-continued fatigue. Mules have been much employed, both in ancient and modern times. The Roman ladies had equi-

pages drawn by mules; and at this day, in Spain, the coaches of the nobility are usually drawn by them.——*Mule*, in manufactures, the name given to a machine, invented by Crompton, in 1779, for producing finer yarn than was spun by the machines previously in use. At present, the *mule* is employed in the fabrication of the most delicate articles; in short, threads have been produced of such fineness, that a pound of cotton has been calculated to reach 167 miles.

MU'LIER, in law, a married woman, in distinction from a concubine. Also, a name for lawful issue born in wedlock, who are preferred before an elder brother of illegitimate birth.

MUL'LET (*mullus*), in ichthyology, a genus of fishes, distinguished by the oblique form of their head, two long appendages under the chin, and large scales on the head and body, which are very easily detached. The most celebrated species is the *mullus barbatus*, found in the Mediterranean, which were held in such estimation by Roman epicures, that they were sometimes sold for their weight in silver. At present they are but little esteemed. The roes are known in Italy under the name of *botargo*.——In heraldry, the *mullet* is a star-shaped ornament, and is added to the family arms by the third of the junior branches of a family, as a mark of their cadency.

MUL'LER, a stone held in the hand, with which colours and other matters are ground on another stone; used by painters and apothecaries.

MULTICAP'SULAR, in botany, having many capsules.

MULTIF'LOROUS, in botany, having many flowers.

MULTILAT'ERAL, in geometry, is a term applied to those figures which have more than four sides or angles polygonal.

MULTILOC'ULAR, in botany, having many cells; as, a multilocular pericarp.

MULTISIL'IQUOUS, in botany, having many pods or seed-vessels.

MULTINO'MIAL, in mathematics, a term applied to such roots as are composed of many names, parts, or members.

MUL'TIPLE, in arithmetic, a number which comprehends some other several times; thus 6 is a multiple of 2, and 12 is a multiple of 6, 4, and 3, comprehending the first twice, the second thrice, &c.——*Multiple Ratio*, or *Proportion*, is that which is between multiples. If the lesser term of the ratio be an aliquot part of the greater, the ratio of the greater to the less is called multiple; and that of the less to the greater submultiple.

MULTIPLICA'TION, an arithmetical operation by which the multiplicand is accumulated as many times as there are units in the multiplier: thus 10 multiplied by 5 is increased to 50. The number multiplying is the *multiplier*; the number multiplied, the *multiplicand*; and the result of the operation is the *product*.——*Cross multiplication*, otherwise called duodecimal arithmetic, is an expeditious method of multiplying things of several species, or denominations, by others likewise of different species, &c.

MUL'TIPLYING GLASS, in optics, a glass with several plane sides, each of which presents a separate picture of an object. This is caused by the rays of light, which issue from the same point, undergoing different refractions, so as to enter the eye from every surface in a different direction.

MULTISILI'QUÆ, the 26th Linnæan natural order of plants, with many seed-vessels, as columbines, &c.

MUL'TIVALVES, in natural history, the name of a general class of shell-fish, distinguished from the univalves and bivalves, by their consisting of three or more shells.

MUL'TURE, in Scots law, the toll or emolument given to the proprietor of a mill for grinding corn.

MUM, a malt liquor much used in Germany. It is made of the malt of wheat, with a small proportion of oat-meal and ground beans.

MU'MIA, in mineralogy, a sort of bitumen, or mineral pitch, which is soft and tough, like shoemaker's wax, when the weather is warm, but brittle, like pitch, in cold weather. It is found in Persia, where it is highly valued.

MUM'MY, a dead body preserved by antiseptics, according to methods practised by the Egyptians. The processes for the preservation of the body were very various. Some of the mummies which have been opened have been dried by vegetable and balsamic substances, others by salt or natron. In the former case, aromatic gums or asphaltum were used; and such were generally in good preservation. Those dried with saline substances are of a black, hard, smooth appearance: on exposure to the air they attract moisture, and become covered with a saline substance. The coffin is usually of sycamore, cedar, or pasteboard; the case is entire, and covered, within and without, by paintings representing funeral scenes, and a great variety of other subjects: the cover, which is also entire, is ornamented in the same manner, and contains, too, the countenance of the deceased in relief, painted, and often gilded. But we are not to imagine that Egypt was the only country in which the preservation of the bodies of the dead was attended to. In every country the custom of embalming has been occasionally practised: and we have recently read, that a million of mummies have lately been discovered in the environs of Durango, in Mexico! They are in a sitting posture, but have the same wrappings, bands, and ornaments as the Egyptians——For the information of all who are interested in these matters, we quote the following *recipe* from the *Literary Gazette*, June 20, 1840.—"M. Gaunal's mixture for injecting the carotid artery, whereby all the purposes of embalming are attained:—One kilogramme of dry sulphate of alumine, dissolved in half a litre of warm water, and marking thirty-two degrees of the arcometer. About

THE COLOUR WHICH MUNJEET IMPARTS TO COTTON AND LINEN IS LESS DURABLE THAN THAT OF MADDER, BUT BRIGHTER ON WOOLLEN.

three or four litres of this will inject all the vessels of the body, and will preserve it in summer;—in the winter, from one to three litres are enough. But, to keep away insects, there ought to be added to the above chlorure of copper, at the rate of 100 grammes to a kilogramme of the sulphate of alumine, or else fifty grammes of arsenic acid. This applies to all kinds of animals, birds, fishes, &c., as well as to the human subject."——In the British Museum, considerable space is allotted to the reception of Egyptian mummies, of which there are at present many more specimens than, in our humble opinion, can possibly be interesting to the antiquarian, or required even for the gratification of those who delight to ponder over the embalmed relics of their species. To us, indeed, such mortuary curiosities present a ghastly and indecent spectacle; and we never see them without wishing that their places were occupied with something more instructive and less revolting to the feelings.

MUMPS, the common name of the disease called by medical practitioners *cynanche parotidea*, or a swelling of the parotid glands. It seems, sometimes, to be the effect of cold, and children are more subject to it than adults. It is often epidemic, and by some is thought contagious.

MUN'DIC, in mineralogy, a sort of copper ore, otherwise called copper pyrites, or sulphuret of copper, the most common ore in the mines of Cornwall. It is of a greenish yellow colour.

MUNI''CIPAL, in the Roman civil law, an epithet which signifies, invested with the rights and privileges of Roman citizens. Thus the municipal cities were those whose inhabitants were capable of enjoying civil offices in the city of Rome; though the greater part of them had no suffrages or votes there.——In modern times, *Municipal law* pertains solely to the citizens and inhabitants of a state, and is thus distinguished from *political* law, *commercial* law, and the *law of nations*. And those are called *municipal officers* who are elected to defend the interest of cities, to maintain their rights and privileges, and to preserve order and harmony among the citizens; such as mayors, sheriffs, &c.

MUN'JEET, a species of madder, produced in various parts of India. The roots are long and slender, and when broken appear of a red colour. It is used in dyeing, the red which it produces being, though somewhat peculiar, nearly the same as that produced by European madder.

MU'NIMENTS, in law, the writings relating to a person's inheritance, by which he is enabled to defend his title to his estate: or, in a more general sense, all manner of evidences, such as charters, feofments, releases, &c.——*Muniment house*, a little strong room in a cathedral, college, or university, destined for keeping the seal, charters, &c. of such cathedral, college, &c.

MUNI''TION, the provisions with which a place is furnished in order for defence; or that which follows a camp for its subsistence.——*Munition ships*, are those that have naval or military stores on board, and attend or follow a fleet to supply ships of war.

MU'RAL ARCH, an arched wall placed exactly in the plane of the meridian, for fixing a large quadrant, sextant, or other instrument, to observe the meridian altitude, &c. of the heavenly bodies.

MURA'LIS CORO'NA, or MU'RAL CROWN, (from *murus*, a wall) among the ancient Romans, a golden crown or circle of gold, indented and embattled, bestowed on him who first mounted the wall of a besieged place and there planted a standard.

MUR'DER, in law, the wilful and felonious killing a person from premeditated malice; provided the party wounded or otherwise hurt, die within a year and a day after the fact be committed. To constitute murder in law, the person killing another must be of sound mind or in possession of his reason, and the act must be done with malice prepense and aforethought; but malice may be implied, as well as expressed.

MU'REX, in ichthyology, a shell-fish noted among the ancients for its purple dye. The murex was said to discharge from its mouth the purple liquor of which the dye was made; on which account the fishermen were careful to catch it alive. In the Linnæn system it is a genus of insects under the class *Vermes*, the animal of which is a *limax:* the shell is univalve and spiral.

MU'RIATES, in chemistry, a genus of salts formed of the muriatic acid with certain bases: the most important of these is the muriate of soda or common salt. It exists abundantly in nature, immense quantities of it being dug out of the earth, which requires only to be reduced to powder. In this state it is called rock salt. It is also one of the constituents of sea-water, and is obtained from it by evaporation.

MURIAT'IC ACID, in chemistry (called also *spirit of salt*, and, by the French, *hydro-chloric acid*, in allusion to its composition), is an acid procured from salt, consisting of hydrogen combined with chlorine gas. Its odour is pungent, and its taste acid and corrosive. If an inflamed taper be immersed in it, it is instantly extinguished: it is also destructive of animal life. It combines, like the other powerful acids, with the alkalies, earths, and metallic oxydes, forming a very peculiar class of salts. In the *materia medica*, this acid is a valuable article; it is particularly used in cases of dyspepsia that are attended with morbid secretions; also in hepatic derangements and cutaneous diseases; and as a disinfecting agent it is found highly serviceable.

MU'RICATED, in botany, having the surface covered with sharp points, or armed with prickles.

MU'RICITE, fossil remains of the *murex*, a genus of shells.

MUR'RAIN, a contagious disorder among cattle, principally caused by a hot, dry season, or general putrefaction of the air, which begets an inflammation of the blood and a swelling in the throat that soon prove mortal.

MURIATE OF COBALT MAKES SYMPATHETIC INK, BEING COLOURLESS WHEN COLD, BUT TURNING GREEN WHEN HELD TO THE FIRE.

MURRHINE VASES, splendid antique vessels, made of a delicate kind of porcelain (or, as some say, of a mineral of the class of sardonyx or agate), and equally distinguished for the beauty of their execution as for the costliness of the material. They were brought, by Pompey, from Asia to Rome, after his victory over Mithridates, and bore an immense price.

MUS. in zoology, a generic term, in the Linnæan system, for a tribe of animals of the class *Mammalia*, and order *Glires*, distinguished principally by their teeth. The most remarkable species are the rat and mouse, the musk rat, and the lemming.

MUSCA, in entomology, the Fly, a genus of insects of the *dipterous* order.——*Musca Indica*, in astronomy, the Fly, a southern constellation.

MUSCADINE, MUSCADEL, MUSCATEL, or MUSCAT (for by each of these names is it known), a rich kind of wine, the growth of Italy and the south of France.

MUSCÆ VOLITANTES, certain dark spots, which seem to flit before the eyes of many people on looking at the sky, a candle, or other bright object; and so called from their resembling flies.

MUSCLE, in anatomy, a part of an animal body, destined to move some other part. The muscles consist of a number of thin parallel plates, divided into a great number of *fasciculi* or little bundles of fibres, so constructed as to admit of relaxation and contraction, and serving as the organ of motion. Each muscle is surrounded by a thin and delicate covering of cellular membrane, which, dipping down into its substance, encloses the most minute fibres we are able to trace, connecting them to each other, lubricating them by means of the fat which its cells contain, and serving as a support to the blood-vessels, lymphatics, and nerves, which are distributed through the muscles.——*Muscular motion* is of three kinds, voluntary, involuntary, and mixed. The *voluntary motions* of muscles proceed from an exertion of the will: thus the mind directs the arm to be raised or depressed, the knee to be bent, the tongue to move, &c. The *involuntary motions* of muscles are performed by organs, without any attention of the mind, as the contraction and dilatation of the heart, arteries, veins, absorbents, stomach, intestines, &c. The *mixed motions* are those which are in part under the control of the will, but which ordinarily act without our being conscious of their acting: and are perceived in the muscles of respiration, the intercostals, the abdominal muscles, and the diaphragm. When a muscle acts, it becomes shorter and thicker; both its origin and insertion are drawn towards its middle. When a muscle is wounded, or otherwise irritated, it contracts independently of the will: this power is called *irritability*, and it is a property peculiar to, and inherent in the muscles. The intensity of muscular contraction, that is, the degree of power with which the fibres draw themselves together, is regulated by the action of the brain. The cerebral influence, and the disposition of the muscular tissue, are the two elements of the intensity of muscular contraction; but a very great cerebral energy is rarely found united, in the same individual, with that disposition of the muscular fibres which is necessary to produce intense contractions, but when they are united they produce astonishing effects. The extremities of the muscles are inserted into the bones.

MUSCOVADO, unrefined sugar, or the raw material from which loaf sugar is procured by refining. Muscovado is obtained from the juice of the sugar-cane by evaporation and draining off the liquid part called *molasses*.

MUSES, in the poetry of the ancients, personifications of the various branches of delightful exercise in which human genius displays itself. They were beautifully said to be the daughters of Jove and Mnemoysné, or Memory; and they were represented as companions of Apollo upon Parnassus. As the subject was wholly dependent upon the fancy of the poet, it was not always treated of alike. Thus according to some, all the functions of the Muses were united in three persons; Mnemé, Aœde, and Meleté; that is, Memory, Song, and Meditation; but it was more usual to reckon nine, and to name them as follows: Clio, to whom they attributed the invention of history; Melpomene, the inventor of tragedy; Thalia, of comedy; Euterpe, of the use of the flute; Terpsichore, of the harp; Erato, of the lyre and lute; Calliope, of heroic verse; Urania, of astrology; and Polyhymnia, of rhetoric.

MUSEUM, a place set apart as a repository for curious, valuable, and interesting objects connected with the arts and sciences, more especially such as relate to natural history. The term was originally applied to a study or a place set apart for learned men in the royal palace of Alexandria, by Ptolemy Philadelphus, who founded a college, and gave salaries to the several members, adding also an extensive library, which was one of the most celebrated in the world.——The British Museum in London is a very extensive and magnificent building, and the noblest cabinet of curiosities in the world. This edifice was erected in 1677, and was called Montague-house, from having been the town residence of the dukes of Montague. In the year 1753, parliament having passed an act for purchasing the museum of Sir Hans Sloane, and the collection of manuscripts of lord Oxford, called the Harleian Library, for the use of the public; twenty-six trustees were appointed and incorporated to provide a repository for these and some other collections, which repository was to be called the British Museum. Since that time vast gifts and purchases have been made, in every department of science, literature, and art; great additions have consequently become necessary to the building, and the accommodation of the public has been studied in every possible way; so that for extent and usefulness it is altogether unrivalled.——There are other museums, well

THE EXTRAORDINARY DENSITY OF THEIR MUSCLES; THE LION IS A STRIKING INSTANCE OF THIS.

BEFORE MUSEUMS WERE ESTABLISHED, A DELUGE OF BARBARISM HAD SWEPT AWAY THE FINEST WORKS OF ANCIENT ART.

WHEN THE HORDES OF BARBARIANS BROKE IN UPON ANCIENT ROME, THE WORKS OF ART WERE INVOLVED IN INDISCRIMINATE DESTRUCTION.

deserving the name, in some of our chief provincial towns; and since the establishment of Literary and Scientific Institutions so generally throughout the country, great progress has been made towards their extension.

MUSH'ROOM *(fungus)*, in botany, a genus of imperfect plants, composed of a pedicle, crowned with a broad head, convex and smooth at the top; and hollow, foliated, lamellated, or fistulous, on the under side. As many *fungi*, closely resembling mushrooms in appearance, are of a poisonous quality, the greatest caution should be used by those who provide them. The surest test is the palate: for when a fungus has a pleasant flavour it is wholesome; if, on the contrary, it have an offensive smell, a bitter, astringent, or styptic tase, or is even of unpleasant flavour, it is unfit for food. Colour, figure, and texture cannot be relied on; yet the pure yellow, gold colour, bluish pale, dark or lustre brown, wine red, or the violet, belong to many that are eatable; while the pale or sulphur yellow, bright or blood red, and the greenish, are generally poisonous. The safe kinds have mostly a compact, brittle texture; the flesh is white; and they grow more readily in open places than in damp or wood-shaded spots.

MU'SIC, is the science of sounds, considered as capable of producing melody, and agreeably affecting the mind by a due disposition, combination, and proportion. It treats of the number, time, division, succession, and combination of sounds. It is divided into *theoretical* music, which inquires into the properties of concords and discords, and explains their combinations and proportions for the production of melody and harmony; and *practical* music, which is the art of applying the theory of music in the composition of all sorts of tunes and airs. Music is also either vocal or instrumental. *Vocal* music is the melody of a single voice, or the harmony of two or more voices in concert; *instrumental* music is that produced by one or more instruments. Every musical production ought to be expressive of feelings, and, through them, of ideas; but though music of some kind exists wherever the human species is found, it does not follow that every good piece of music must please all men alike, or be understood by all alike, because music is an art requiring cultivation of the mind and heart, to appreciate it fully. As civilization advances, music, as a science, gains new advocates; and the day is evidently fast approaching when few will decry music on the ground that its effects are merely sensual. It is addressed to the ear, indeed; but all the influences which we receive from without are conveyed through the medium of the senses; and the tones of music often speak a language to the soul richer in meaning than words could express. Nothing is merely sensual which makes a lasting spiritual impression upon us; and those who deny to music such a power, have not heard its sublimest strains, or have not the capacity to appreciate them.—With regard to the antiquity of music, it appears to have been almost coeval with man. Moses tells us that Jubal, who lived before the flood, was the inventor of the kinnor and the hugah, *i. e.* the harp and the organ. The Jews were fond of music in their religious ceremonies, their feasts, their public rejoicings, their marriages, and their mournings. The music of the temple was performed by the families of Asaph, Heman, and Jeduthun the Levites, whose whole business was to learn and practise this agreeable art; and abundant provision was made for them, that they might not be prevented from pursuing their musical studies by the cares of life. Kings and great men among the Jews studied music, and David made a very great proficiency in it. In their time, indeed, music had reached its highest perfection among the Hebrew nation, and part of their religious service consisted in chanting solemn psalms, with instrumental accompaniments.—The invention of the lyre is ascribed to Hermes Trismegistus, the Mercury of the Egyptians, which is a proof of its antiquity; but a still greater proof of the existence of musical instruments amongst them at a very early period, is drawn from the figure of an instrument said to be represented on an obelisk, erected, as is supposed, by Sesostris at Heliopolis. The Greeks, we know, were exceedingly fond of music. It had a considerable share in their education; and so great was its influence over their bodies as well as their minds, that it was thought to be a remedy for many disorders.

MUSK, a dry, light, and friable substance, of a dusky black colour, tinged with purple; it is of a very strong scent, and only agreeable when in small quantity, or moderated by the mixture of some other perfume. It is partially soluble in water, which receives its smell, and also in alcohol, to which, however, it does not communicate its odour. It is imported into England from China; but an inferior kind is brought from Bengal, and a still baser sort from Russia. From its being a very high-priced article, it is often adulterated.—The *Moschus Moschiferus*, or Thibet musk, from which the perfume is obtained, is a quadruped, in size and figure resembling a small roebuck. The hair of the body is long, and stands erect; the tail short; the ears long and narrow; black hoofs; and tusks, nearly two inches long, which project considerably. The male is furnished with a small bag, about the size of a hen's egg, hanging from the abdomen, in which is contained the musk. As this animal is naturally timid, it lives on the cliffs and summits of lofty mountains; and in running, leaping, and climbing, it displays astonishing agility.

MUSKETOON', a short thick musket, carrying five ounces of iron, or seven and a half of lead, with an equal quantity of powder.

MUSK'-MELON, a delicious kind of melon, named probably from its fragrance.

MUSK'-OX, in zoology, a species of the

WHEN MUSK IS THOROUGHLY DRIED IT BECOMES NEARLY SCENTLESS; BUT IT IS RESTORED BY BEING MOISTENED WITH WATER OF AMMONIA.

genus *Bos*, which inhabits the most barren parts of North America. The musk ox is considerably smaller than the common ox. Their horns are very broad at the base, covering the forehead and crown of the head, but curving downwards between the eye and ear, until about the level of the mouth, when they turn upwards. The colour of the hair is generally brown: on the neck and between the shoulders it is long, matted, and somewhat curled, causing the animal to appear humped: on the shoulders, sides, and thighs, it is so long as to hang down below the middle of the leg. The legs are short and thick, and furnished with narrow hoofs.

MUSK'-RAT, an animal of the beaver kind, which yields an oily fluid, having the perfume of musk. The colour of its body is a reddish-brown, the belly and breast of an ash colour. The hair is soft and glossy, and beneath it is a thick coat, which is much used in the manufacture of hats. The flesh is not eatable, from the strong odour of musk that pervades it. Musk-rats are very common in North America. They dwell on the banks of small rivers; and where the banks are high they form large and extensive burrows, which have entrances below the surface of the water, and gradually ascend till they terminate in a chamber above the level of high water. When, however, these animals inhabit low and marshy situations, they construct houses not very unlike those of the beaver, composed of reeds, &c. mixed with clay. They swim remarkably well, and are capable of remaining under water for a considerable time. The popular name of the musk-rat in America is *musquash*.

MUSK'-ROSE, a sort of rose from which a highly odorous oil is extracted at Tunis.

MUS'LIN, a fine sort of cotton-cloth, which bears a downy knap on its surface. This knap the French call *mousse*, as resembling moss; whence the name *muslin*. Muslins are made in the greatest perfection in Asia; but the nations of Europe imitate the manufacture with great success. The extreme lightness of the finer performances of the East is admirable.

MUS'NUD, the name of a royal throne in eastern countries.

MUSQUI'TO, a kind of gnat that abounds in marshes and low lands, in hot countries; whose sting is peculiarly painful and vexatious.

MUS'SEL, or MUS'CLE, a fish inhabiting a bivalvular shell, from which, in some seas, pearls are often obtained. It is found in large beds, adhering to other bodies by a long silky beard.

MUS'SULMAN, or MOS'LEM, a follower of Mahomet. This word signifies, in the Turkish language, a true believer.

MUST, the juice of the grape, which by fermentation is converted into wine.

MUSTA'CHES (French, *moustache*; Italian, *mostaccio*); the hair left growing on the upper lip.

MUS'TARD, in botany, a plant of the genus *Sinapis*, which is very commonly cultivated for the sake of its seeds, which when powdered and mixed with vinegar or water, form a well-known pungent condiment in daily use. It is a powerful stimulant, for which it is often taken internally, and used externally in cataplasms.

MUSTE'LA, in zoology, a genus of animals, class *Mammalia*, order *Feræ*; comprehending the otter, badger, martin, sable, polecat, ferret, ermine, and some species of the weasel.

MUS'TELINE, an epithet for whatever pertains to the weasel, or animals of the genus *Mustela*.

MUS'TER-ROLL, in a military sense, a list of the officers and men in every regiment, which is delivered to the muster-master, inspecting field-officer, or whoever is appointed to inspect the same.

MUTE, in law, a person that stands speechless when he ought to answer or plead.——In grammar, a letter that represents no sound. Mutes are of two kinds: the *pure mutes* which entirely intercept the voice, as *k*, *p*, and *t*, in the syllables, *ek*, *ep*, *et*; and the *impure mutes*, which intercept the voice less suddenly, as *b*, *d*, and *g*, in the syllables *eb*, *ed*, *eg*.——*Mute*, in mineralogy, an epithet for minerals which do not ring when they are struck.

MUTES, in the Grand Seignior's seraglio, dumb officers who are sent to strangle, with the bow-string, bashaws or other persons who fall under the sultan's displeasure.——*Mutes*, among undertakers, men who are employed to stand at the door of the deceased, until the body is carried out.

MU'TINY, an insurrection of soldiers or seamen, or open resistance to the authority of their commanders. Any attempt to excite opposition to lawful authority, or any act of contempt towards officers, or disobedience of commands, is by the British mutiny act declared to be mutiny, and is punishable by the sentence of a court-martial.

MYOG'RAPHY, or MYOL'OGY, that part of anatomy which treats of the muscles of the human body.

MYR'IAD, the number of ten thousand; or, in poetical language, an innumerable multitude.

MYRIAM'ETER, in the new system of French measures, the length of ten thousand meters, equal to two of the former leagues.

MYR'IARE, a French linear measure of ten thousand acres, or 100,000 square meters.

MYR'ICINE, in chemistry, the substance which remains after bees-wax has been digested in alcohol.

MYRIOL'ITER, a French measure of capacity, containing ten thousand liters, or 610,280 cubic inches.

MYRIORA'MA, a movable picture, capable of forming an almost endless variety of picturesque scenes, by means of several fragments or sections of landscapes on cards, which may be placed together in numberless combinations.

MYRME'LEON, a genus of insects in the Linnæan system, one species of which is remarkable on account of its larva, which

MUSTARD WAS FORMERLY EXTENSIVELY CULTIVATED IN DURHAM, BUT IT IS NOW CHIEFLY GROWN IN THE NORTH RIDING OF YORKSHIRE.

has the property of preparing a sort of pitfall for the ensnaring of other insects.

MYROB'ALAN, a dried fruit of the plum kind, brought from the East Indies, and formerly used in medicine. The Hindoos use them both in medicine and in calico printing. They have an unpleasant bitter taste; produce, with iron, a durable black dye and ink; and with alum, a very full, though dark, brownish yellow.

MYRRH, a fragrant, bitter, aromatic gum-resin, issuing by incision, and sometimes spontaneously, from the trunk and larger branches of a tree growing in Egypt, Arabia, and Abyssinia. The tree which yields this substance is not exactly known, but, according to Bruce, it is a species of *mimosa*. It is light and brittle; does not melt when heated; burns with difficulty; and yields oil by distillation. It is very valuable in medicine. It was this gum, which the magi, who came from the East to worship our Saviour, made him an offering of, and it was this also which was mingled with the wine given him to drink at his passion. The gall mentioned on the same occasion by St. Matthew, is probably the same with myrrh; for any thing bitter was usually distinguished by the name of gall.

MYR'TLE, in botany, a fragrant shrub, of the genus *Myrtus*, which, among the ancients, was sacred to Venus. The common myrtle is a native of Asia, Africa, and Europe; and has been celebrated from remote antiquity on account of its fragrance and the beauty of its evergreen foliage. Myrtle wreaths adorned the brows of bloodless victors, and were the symbol of authority for magistrates at Athens. The genus *myrtus*, in the Linnæan system, includes also among its species the pimento or all-spice tree. ——*Myrtle wax*, a concrete oil, or vegetable wax, the product of the class of plants *myrica*, more commonly known by the name of *candleberry myrtle*.

MYS'TERIES, or MIR'ACLES, in the middle ages, were a favourite kind of dramatic spectacles or entertainments, represented at solemn festivals. They were in vogue previous to the "*moralities*" which we have before spoken of; and were called *mysteries* and *miracles*, because they taught the mysterious doctrines of Christianity, and represented the miracles attributed to the saints and martyrs. At first the ecclesiastics were both the authors of them and the performers.

MYS'TERY, something secret or concealed, impossible or difficult to comprehend. All religions, true or false, have their mysteries. The pagan religion was remarkably full of them; and it is presumed that they were designed to interpret those mythological fables and religious rites, the true meaning of which it was thought expedient to conceal from the people. The Eleusinia, or sacred rites of Ceres, solemnized at Eleusis, were called, by way of eminence, *the mysteries;* and so superstitiously careful were they to conceal these sacred rites, that if any person divulged any part of them, he was thought to have called down some divine judgment on his head, and it was accounted unsafe to abide under the same roof with him: Horace, indeed, declares, that he would not put to sea in the same ship with one who revealed the mysteries of Ceres. Many of the pagan mysteries were doubtless mysteries of iniquity, and kept secret because the knowledge of them would have rendered their religion ridiculous and odious. Thus we find the sacred writings often speak of the infamous mysteries of the pagan deities, in which the most shameful crimes were committed under the specious veil of religion. The whole religion of the Egyptians was mysterious from the beginning to the end, and both their doctrines and worship wrapped up in symbols and hieroglyphics.——The religion of the *Jews* was likewise full of mysteries; their laws, nay, their whole constitution and nation, were mysterious; but the mysteries of the Old Testament were generally types or shadows of something in the New. The Christian religion has also its mysteries; but, in the scripture language, the word mystery is used with some latitude, and denotes whatever is not to be known without a divine revelation.

MYS'TICS, a religious sect distinguished by their professing a pure, sublime, and perfect devotion, with an entire disinterested love of God, free from all selfish considerations, and by their aspiring to a state of passive contemplation.

MYTHOL'OGY, the history of the fabulous gods and heroes of antiquity, with the explanations of the fables or allegories couched therein. According to the opinion of most writers, among whom is that profound thinker, Lord Bacon, a great deal of concealed instruction and allegory was originally intended in most part of the ancient mythology: he observes, that some fables discover a great and evident similitude, relation, and connection with the thing they signify, as well in the structure of the fable, as in the meaning of the names whereby the persons or actors are characterized. He also takes a more enlarged and higher view of the subject, and looks on them not as the product of the age, nor the invention of the poets, but as sacred relics, or, as he terms them, "gentle whispers, and the breath of better times, that from the tradition of more ancient nations, came at length into the flutes and trumpets of the Greeks." But whether mythological fables are to be considered as allegorical expositions of truth, or gross conceptions of divine things formed by the ignorant, or as founded on historical facts, which have been varied and exaggerated by tradition, embellished by poetry, and purposely altered by cunning, they still retain their interest for the historian, to whom it is equally important to study the wide aberrations of mankind in their search for truth, as their successful attempts to attain it.

N.

N, the fourteenth letter and eleventh consonant of the English alphabet, is an imperfect mute or semi-vowel, because part of its articulation may be continued for any length of time; it is also a liquid, and a nasal letter, the sound being formed by forcing the voice strongly through the mouth and nostrils, which, at the same time, is intercepted by applying the tip of the tongue to the fore part of the palate, with the lips open. It has one sound only, and after *m* is silent, or nearly so, as in *hymn, condemn*. Among the ancients, N stood as a numeral for 900; and, with a dash over it, for 9000. N. or No. stands as an abbreviation for *numero*, number; also for north.

NA'BOB (a corruption of *navab* or *nawaub*), an Indian word for a deputy; a title of dignity and power applied to those who act under the soubahs or viceroys. The term, however, has become proverbial, in England, to signify a person who has acquired great wealth in our Indian possessions, and lives in great splendour.

NAC'ARAT, a crape or fine linen fabric, dyed fugitively of a pale red colour, which ladies rub upon their countenance to give them a delicate roseate hue.

NAC'RE (from *nacar*, Spanish), a term denoting the peculiar lustre of mother-of-pearl.

NA'CRE, in conchology, a testaceous animal, the *Pinna* of Linnæus, which produces a strong byssus that is woven by the Italians into a sort of silk.

NA'CRITE, a rare mineral, consisting of scaly parts; glimmering, pearly, friable, and somewhat greasy; the colour a greenish white.

NA'DAB, the sovereign pontiff, or high-priest of the Persians, whose dignity and office are very similar to that of the mufti among the Turks.

NA'DIR, in astronomy, that point of the heavens which is diametrically opposite to the zenith; the point directly under the place where we stand. The zenith and nadir are the two poles of the horizon.

NA'HUM, or *the prophecy of Nahum*, a canonical book of the Old Testament. Nahum, the seventh of the twelve minor prophets, was a native of Elkoshai, a little village of Galilee. The subject of his prophecy is the destruction of Nineveh, which he describes in the most lively and pathetic manner; his style being bold and figurative.

NA'IADS, in mythology, water-nymphs, or deities that preside over brooks and fountains. They are represented as beautiful women, with their heads crowned with rushes, and reclining against an urn, from which water is flowing.

NAI'ANT, in heraldry, an epithet for fish that are borne across the escutcheon, as if swimming.

NAIL, a bony excrescence growing at the ends of the fingers and toes of men and animals. The several parts of nails have their respective names: the extremity is called the apex; the opposite end, the root or base; and the white part near the latter, somewhat resembling a half moon, *lunula*. The substance of the nail is that of the skin, hardened, but firmly connected with it: for this reason, it is extremely sensible at its root, where the substance is yet tender; but at the apex, where it is perfectly hardened, it is capable of being cut without pain.——*Nails*, in building, small spikes of iron or other metal, generally with a head, formed for driving into and fastening boards, &c. together. Of these there are numerous kinds; and of such importance is the manufacture become, that several patents have lately been taken out for improved nail-making machinery, as well as for nails made by hand labour. The consumption of nails is immense, as those who have witnessed this branch of the iron manufacture of Birmingham, Bilston, Wolverhampton, Dudley, &c. must be well aware.——*Nail*, a measure of length containing the sixteenth part of a yard.

NAIS'SANT, in heraldry, a term applied to any animal issuing out of the midst of some ordinary, and showing only his head, shoulders, fore feet and legs, with the tip of his tail.

NAIVETE' (*naiveté*, Fr.) naturalness; absence of artifice. The essential meaning of the word is a natural, unreserved expression of sentiments and thoughts, without regard to conventional rules, and without weighing the construction which may be put upon the language or conduct. When it is genuine, it implies a guileless simplicity of heart, unimpaired by the chilling experience of society; but when affected, it is pre-eminent hypocrisy: and a good judge of human nature will infallibly detect it.

NAME, a word whereby men have agreed to express some idea; or which serves to signify a thing or subject spoken of. Names are either proper or appellative. Proper names are those which represent some individual thing or person, so as to distinguish it from all other things of the same species; and are either called Christian, as that given us at baptism, or surnames; the first imposed for the distinction of persons, answering to the Roman *prænomen*; the second for the distinction of families, answering to the *nomen* of the Romans, and the *patronymicum* of the Greeks. The ancient Britons, says Camden, generally took their names from colours, because they painted themselves. When they were subdued by the Romans, they took Roman names; the Saxons introduced the German names; the Danes brought with them their names; and the Normans introduced theirs.

THERE IS A PRODIGIOUS CONSUMPTION OF NAILS IN THE UNITED STATES, AND THEY ARE ALL MADE BY MACHINERY.

"WHAT'S IN A NAME? THAT WHICH WE CALL A ROSE, BY ANY OTHER NAME WOULD SMELL AS SWEET."—SHAKSPEARE.

DURING THE EIGHTEENTH CENTURY THE POPULATION OF ENGLAND AND WALES WAS DOUBLED, BUT THE INCREASE OF REAL WEALTH WAS MORE THAN DOUBLED.

GREAT AS OUR NATIONAL DEBT HAS BEEN, IT HAS NEVER PARALYZED BRITAIN'S PECUNIARY STRENGTH, OR EXHAUSTED THE STORES OF HER CIVIL PROSPERITY.

NANKEEN', or NANKIN', a sort of cotton cloth, of a firm texture, which takes its name from *Nanking*, in China, where it was originally manufactured. It is now imitated in most other countries where cotton goods are woven; but none is equal to that made in the East, on account of the natural colour of the cotton (*gossypium religiosum*) being reddish, while we are compelled to use a dye to give it the proper hue.

NAPH'THA, or ROCK OIL, in mineralogy, one of the thinnest of the liquid bitumens issuing from the earth, of a light brown or yellowish colour, and found on the borders of springs on the shores of the Caspian Sea. It feels greasy, has a bituminous smell, takes fire on the approach of flame, and is so light as to float on the water. It rises in many parts of Asia, and oxygen explodes it by the mere heat of the sun.

NAPH'THALINE, a white crystalizable substance, which may be extracted by distillation from coal tar. It is a bicarburet of hydrogen, and has a strong aromatic smell.

NA'PLES YEL'LOW, a fine yellow pigment, employed not only in oil painting, but also for porcelain and enamel. It has a fresh, brilliant, rich hue. Of late years chromate of lead has very much superseded its use.

NARCIS'SUS, in botany, the Daffodil; a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*. The narcissus is cultivated in gardens on account of its sweet-smelling flowers, which are either yellow or white. They are of the bulbous rooted tribe, perennial in root, but with annual leaves and flower-stalks. The corolla is double, the outer envelope consisting of six petaloid divisions, while the inner is cup-shaped, with the margin entire, or variously indented, in the different species. On this cup depends much of the beauty of these flowers.

NARCOT'ICS, in medicine, soporiferous medicines, which by causing stupefaction take away the sense of pain. The elements by which narcotics act, are of a highly volatile and penetrating nature, since they deeply insinuate themselves like a vapour into the pores of the membranes and nerves, and by insensible degrees deprive the solids of their tone and motion.

NAR'COTINE, in chemistry, the pure narcotic principle of opium.

NARD, a sort of aromatic oil, with which the ancients used to anoint themselves at their feasts.

NAR'WAL, or NAR'WHAL, in zoology, the *Monodon monoceros*, a cetaceous animal found in the northern seas, sometimes attaining the length of fifty feet. When young it has two teeth or horns, but when old it has but one, which projects from the upper jaw and is spiral. It is sometimes, from this circumstance, called the *sea-unicorn*.

NASTUR'TIUM, in botany, a plant of the genus *Tropæolum*.

NATA'LIS, or NATALIS DIES, properly signifies a birth-day; but it was used by the ancients more particularly to signify the feast held on the anniversary of the birth-day of an emperor: hence in time it served to denote any sort of feast; and the primitive Christians used it in this sense.

NATIV'ITY, the day of a person's birth. The word nativity is chiefly used in speaking of the saints, as the nativity of St. John the Baptist, &c. But when we say *the Nativity*, it is understood to mean that of Jesus Christ, or Christmas Day.

NA'TIONAL DEBT, a sum borrowed by government, on the security of the existing taxes, which stand pledged to the lender for the payment of the interest of the sum borrowed. Thus, at the Revolution, for the purpose of avoiding unpopular taxation, the English government borrowed, on the credit of the existing taxes, of a company, then incorporated under the name of the Bank of England; and, as the system was found convenient, this debt increased. By the following statement, the progressive increase of the National Debt appears at the following political eras, thus:—At the Revolution, in 1688, it was 664,263*l.*; at the accession of Q. Anne, in 1702, 16,394,702*l.*; at the accession of George I., in 1714, 54,145,363*l.*; at the accession of George II., in 1727, 52,092,238*l.*; at the commencement of the American War, in 1775, 128,583,635*l.*; at the conclusion of the American War, 238,484,870*l.*; at the commencement of the French Revolutionary War, in 1793, 239,350,148*l.*; at the conclusion of the French Revolutionary War, 699,315,561*l.*; on January 5th, 1817, when the English and Irish Exchequers were consolidated, 848,282,477*l.* In the 24 years from 1793 to 1816, both inclusive, the national expenditure exceeded the income derived from taxes, by upwards of four hundred and thirty millions, which were converted into a national annuity account, or in more popular language, formed part of the National Debt, at the rate of about 60*l.* for 3*l.* of the annuity; but since January 5th, 1817, the income derived from taxes yearly exceeding the expenditure, the savings, with other sums, were applied to the repurchase of the annuities created during the said 24 years, at rates varying from 71*l.* 19*s.* 3*d.* to 94*l.* 3*s.* 6*d.*, so as to take an average rate of 60*l.* per cent.

NA'TROLITE, in mineralogy, a variety of zeolite, so called by Klaproth on account of the great quantity of soda it contains.

NA'TRON, in chemistry, native carbonate of soda, or mineral alkali. It is common in Egypt; and in Mexico and Columbia there are several natron lakes, from the bottom of which native mineral natron is dug up.

NAT'URAL, pertaining to nature: thus we speak of the *natural* growth of animals or plants.——*Natural orders*, in the botanic system, a classification of plants different from the sexual, founded on general common characters.——*Natural class*, an assemblage of several genera of plants, agreeing in their parts of fructification, general appearance, and qualities.——In music, *na-*

tural harmony is that produced by the natural and essential chord of the mode. A *natural note* is that which is, according to the usual order of the scale, opposed to *flat* and *sharp* notes, which are called *artificial*.——*Natural*, in heraldry, is when animals, fruits, flowers, &c. are blazoned with their natural colours.

NATURAL HISTORY, in its most extensive sense, is the description of whatever is created, or of the whole universe, including the heavens and the earth, and all the productions of the earth. But in a more appropriate sense, it treats of those substances of which the earth is composed, and of those organized bodies, whether vegetable or animal, which adorn its surface, soar into the air, or dwell in the bosom of the waters. In this sense, natural history may be divided into two heads; the first teaches us the characteristics, or distinctive marks of each individual substance, whether animal, vegetable, or mineral: the second renders us acquainted with all its peculiarities, in respect to its habits, its qualities, and its uses. To facilitate the attainment of the first, it is necessary to adopt some system of classification, in which the individuals, that correspond in particular points, may be arranged together. A knowledge of the second head can only be acquired by a diligent and accurate investigation of each particular object.

NATURAL PHILOS'OPHY, that branch of science which treats of the powers of nature, the properties of natural bodies, and their actions on one another; its legitimate pursuit being averse to all hypotheses, miracles, absurdities, and contradictions. It comprehends under it the several divisions of astronomy, chemistry, electricity, galvanism, hydrostatics, magnetism, mechanics, optics, pneumatics, &c.; and determines the arithmetical laws which accompany antecedent and consequent phenomena. Natural philosophy is, in fact, the great instrument of the philosophy of nature, furnishing it with the materials from which its conclusions must be drawn.

NATURALIST, a person well versed in the study of nature, and the knowledge of natural bodies, especially in what relates to animals, vegetables, metals, minerals, and stones.

NATURALIZATION, in law, the act of naturalizing an alien, or placing him in the condition (that is, investing him with the rights and privileges) of a natural subject, except that he is incapable of being a member of the privy council or of parliament, or of holding offices, grants, &c. In England this is done by act of parliament.

NATURE, a word of vast and comprehensive signification, embracing, as it were, the whole universe—all that is comprised under the superintending care of the great Creator. Thus when we say, Nature is benevolent and wise, we understand either the Deity himself, or a power performing the will of the Deity, and conducting every thing in this world under his order: a notion supported by some ancient systems of philosophy, adopted by poets, and most easy to popular idea. Independently of this, however, we often say Nature herself, &c. in a merely figurative sense; personifying the laws of nature, that is, the properties of matter. When, therefore, we say, that nature covers the earth with abundance, we mean that God covers the earth with abundance; when we say that nature is magnificent and inexhaustible, we mean that creation is magnificent and inexhaustible. When we speak of the study of nature, we mean the study of creation; which embraces first, the knowledge of things, and secondly the knowledge of the properties of things. Nature (meaning thereby the whole body of created things) presents an assemblage of objects in every respect worthy of the attention of mankind. As an animal whom it behoves to make provision for his wants, the knowledge of its productions, and the means by which they may be best obtained, are points of view in which no persuasive to the study is necessary; necessity, and the rich rewards of assiduity, have ever stimulated him. But the intellectual powers of man require other sources of enjoyment, and these too, nature can supply. Here, curiosity can never want a motive; here, all the pleasures of tender feelings or sublime conceptions may be enjoyed. Nature is made to conform in some degree to the hand of man, and resist only when his ignorance violates its essential order. It yields its secrets to his inquiries; to his sensibility it presents the most engaging images; and remains, to all ages, a picture perpetually renewed of the primitive creation of God.——There is another sense, too, in which the word *nature* is of continual occurrence; viz., the *nature* of man; by which we understand the peculiar constitution of his body or mind, or the qualities of the species which distinguish him from other animals. So also we express by this word, the essential qualities or attributes of any other thing; as the *nature* of blood, of a metal, of plants, &c. Again, when we allude to the established or regular course of things, we say, this or that event is not according to *nature*.——In the fine arts, *nature* often means the successful imitation of nature; but, with artists of a higher order, *nature* does not signify a *mere copy*, but as it were, the expression of the *ideal* of nature, at which she aims in all her formations, yet without ever absolutely attaining it.——By the *law of nature* is understood, that system of principles which human reason has discovered to regulate the conduct of man in all his various relations. In its most extensive sense, it comprehends man's duties to God, to himself, and to all mankind.

NAUCRA'RI, in antiquity, officers among the Athenians, who were so called because they were obliged to furnish one ship besides two horses for the public service.

NAUL'AGE, the freight or passage money for goods or persons by sea, or passage over a river.

"WHERESOEVER MERE NATURE IS, SHE IS STILL IMPROVIDENT OF FUTURE GOOD, SENSIBLE OF PRESENT EVIL, INCONSTANT OF GOOD PURPOSES."—BP. HALL.

NAUMA'CHIA, the representation of a sea fight, which among the Romans formed a part of the Circensian games. These mock sea-fights are supposed to owe their origin to the time of the first Punic war, when the Romans first initiated their men in the knowledge of naval affairs. Afterwards they were intended both to entertain the populace, and improve the seamen. They were frequently, like other shows, exhibited at the expense of individuals to increase their popularity. Under the emperor Domitian such a vast number of vessels engaged as would have almost formed two regular fleets for a proper fight, and the channel of water was equal in dimensions to a natural river. The emperor Heliogabalus is said to have filled the channel where the vessels were to ride with wine instead of water. Tritons and sea-monsters were often exhibited during the engagement. The *Naumachiarii*, or persons who fought in these exhibitions, were gladiators, slaves, criminals, &c. who were doomed to die, unless they were saved by the interposition of the people, or of the person presiding at the spectacle.

NAUS'COPY, the art of ascertaining the approach of vessels, or being on a vessel, the approach to land, at a very great distance, as, for instance, from one hundred to two hundred leagues.

NAU'SEA, in medicine, a sickness of the stomach, accompanied with a propensity to vomit; arising from a loathing of food, excited by some viscous humour that irritates the stomach.

NAU'TILUS, in natural history, a genus of marine animals, whose shell is formed of one continued piece, rolled as it were into a spiral form, and having its cavity divided into a great number of cells, by transverse partitions, each of which has a perforation, and is continuous to the others by means of a pipe carried the whole length of the shell. One species, found in the Mediterranean and Atlantic seas, is furnished with two arms united by a membrane, which it extends as a sail, and floats on the surface of the water, while with two other arms it rows or steers.

NA'VAL AR'CHITECTURE, or SHIP-BUILDING. The art of constructing vessels for the purposes of navigation, was, in all probability, anterior to the deluge, and is generally admitted to have been handed down by Noah to his posterity. That, in a rude state, it was practised in Egypt, there is no question; and the Greeks are supposed to have derived their knowledge of it from the Carthaginians. But neither in Greece nor in Rome, did naval architecture rise to what may be termed a scientific knowledge of the art of ship-building. The crusades first gave the impulse to improvements in ship-building, which, notwithstanding, continued for some time at a low ebb. The states of Venice and Genoa were the first to increase the size of their ships, but they were soon surpassed by the Spaniards, who first employed cannon. The Hanse Towns made such advances in naval architecture, that in the fourteenth century it was usual for them to let their ships out to foreign princes. In the reign of Henry IV. ships of considerable size began to be built in England, and they continued to increase in magnitude until the reign of Henry VIII., when two very large ships were built, namely, the Regent, of 1000 tons burthen, and the Henry Grace Dieu, which was larger. From the reign of Charles II. the navy of Great Britain acquired great importance, and in consequence of the wars which have been since carried on in several subsequent reigns, it has risen to its present state.——*Naval stores* comprehend all those articles made use of, not only in the royal navy, but in every other kind of navigation; as timber and iron for shipping, pitch, tar, hemp, cordage, sail-cloth, gunpowder, ordnance, and fire-arms of every sort, ship-chandlery wares, &c.

NAVA'LIS CORO'NA, a crown among the Romans given to him who first boarded an enemy's ship; it was a circle of gold representing the beaks of ships.

NAVIGA'TION, the art and science by which, in open seas, ships are conducted from port to port. This is effected by charts of the seas, and by keeping a journal of the courses from hour to hour, and the distance on each, by means of the log line, each knot on which corresponds to a mile of distance. Also by observations on the sun, moon, and stars, made with instruments, and checked by tables and almanacs.——Imperfect as were the means and knowledge of the ancients in this noble art, yet the Carthaginians, who superadded the greatest commercial enterprise to the greatest skill which had yet been attained, achieved the most brilliant results. They made the whole of the old world tributary to their city: not contented with exploring every nook and corner of the Mediterranean, they left behind the *ne plus ultra* which had hitherto almost entirely bounded the excursions of their predecessors, visited the Atlantic coasts of Europe, the British isles, and, pursuing the grand idea which afterwards led the Portuguese to India, discovered a vast extent of the western coast of Africa. The art of navigation gained nothing after the fall of Carthage; and the invasion of the northern barbarians effectually extinguished the few gleams of science which had survived her catastrophes. Everything remained stationary for centuries, until the returning day of civilization began once more to dawn upon the world,—when by the discovery of the magnet, and the invention of the mariner's compass which followed it, results of the most important kind were to be effected. [See MAGNET, COMPASS, &c.]

NAVIGA'TION LAWS, a most important branch of maritime law, defining the peculiar privileges to be enjoyed by British ships, and the way in which they shall be manned; as also the conditions under which foreign ships shall be allowed to engage in the trade of this country, either as importers or exporters of commodities. As long

ago as the reign of Henry VII. two of the leading principles of the late navigation law were distinctly recognized, viz. the prohibition of the importation of certain commodities, unless imported in ships belonging to English owners and manned by English seamen. But a first regard for our manufacturing and commercial interests required that great modifications should take place in our restrictive maritime policy, and we have accordingly, to a great extent, adopted what has been called the "reciprocity system" in our intercourse with other nations.

NAVE, in architecture, the middle or body of a church, extending from the balluster or rail of the choir to the chief door. Also, that part in the middle of a wheel where the spokes are fixed.

NA'VY, the whole naval establishment of any country, including the collective body of ships, officers, men, stores, &c. That part of the navy of Great Britain which is distinguished by the title of the *royal navy*, comprehends all ships of war and their crews, &c. The ministerial management of the royal navy of Great Britain is entrusted to seven lords commissioners for executing the office of the lord high-admiral of England, commonly known by the title of lords of the admiralty. Commissioners of the navy are officers whose department is wholly distinct from that of the admiralty. The number of those resident in London is eight, and there are others stationed in different parts of the empire. They superintend the dock-yards, and provide the vessels which the admiralty requires for service. To the royal navy there also belong a victualling office, an office of sick and wounded seamen, and a pay office. ——In a long article on *naval warfare*, in the "Conversations Lexicon," so graphic a description of a presumed encounter between two ships of the line is given, that we are tempted to extract it:—"Assuming the advantage of the weather-gage, let us prepare for action. Top sails, top-gallant-sails, jib, and spanker, with the courses hauled up, ready to be set again, are good sails to fight under, for with them your ship is under perfect order to advance, manœuvre, or lie to. If there is an appearance of squally weather, it is well to have a reef in the topsails, in anticipation. The crew are called to quarters by beat of drum, every man going to the station which has been rendered familiar to him by frequent training, under the eye of his officers. The commander, standing in a conspicuous station on the quarter-deck, watches his own ship and the enemy, and conveys the order that the occasion may require by voice, or through the medium of his *aides*. Under him, the first lieutenant commands the offensive and defensive operations, and effects the various evolutions which he may direct, in relation to the position of the ship. The clues are stoppered, to keep the sails spread in the event of the sheets being shot away, and the yards are hung in chains, to obviate a like inconvenience from the cutting of the ties. The carpenter rigs the pumps to prepare for a leak, collects his shot plugs to stop holes in the side, and fishes of wood to strengthen a mast, or yard, that may be wounded, and in danger of falling. The surgeon prepares, in the cockpit, to relieve the wounded. Tubs of water are collected in the tops, channels, and on deck, to be ready to extinguish fire; the decks are wet, to prevent the explosion of powder, and put out sparks that may fall there, and also sanded to prevent the men from slipping when splashy with blood or water. Finally, plenty of wads and shot, round, grape, and canister, are collected beside the guns, and the magazine is opened by the gunner and his crew, who prepare to pass the cartridges to the powder-boys. And now, having given three cheers, you bear down upon the enemy. It is a great object, in battering from ship to ship, to rake your enemy, if possible; that is, to get across his bow, or stern, out of reach of his guns, whilst yours sweep the whole length of his deck with fatal execution. If it is desirable to rake your enemy, it is equally so to avoid being raked in return. This double advantage can only be attained by superior sailing, or by great skill in manœuvring. In directing your fire, it is best to aim between wind and water, and also in the direction of the masts, for in this way the enemy may be soonest disabled, and a victory gained, with the least destruction of life. If, on the contrary, your own spars be so disabled that the enemy, having the worst in other respects, might yet effect his escape from your inability to make sail in pursuit; or even in the more desperate case of your being every way worsted; you may yet profit of your situation to bear down and board, as the last alternative. In the cast of this last chance, a hopeless cause may sometimes be restored; for in boarding, headlong valour, oftener than numbers, decides the struggle. When the enemy signifies that he yields, by hauling down his colours, a prize-master and crew are detailed; the prisoners are removed and chained, and as much exertion is made in repairing damages as was before exercised in effecting them."

NAZ'ARITE, among the Jews, one who had laid himself under the obligation of a vow to observe the rules of Nazariteship, either for his whole life, as was the case with Samuel, and John the Baptist; or only for a time, as those mentioned in Numb. vi. 18, 19, 20, and Amos ii. 11, 12. The rules of Nazariteship, during the time specified in the vow, obliged the man or woman to more than ordinary degrees of purity.

NEAP'-TIDES, the tides in the second and last quarters of the moon. Also low tides, not so high nor so swift as the spring-tides.

NEAT, all kinds of bovine cattle, as the ox, cow, &c. Thus *Neat's-foot oil* is an oil extracted from the feet of oxen; and *Neat's leather*, leather made of the hide of an ox.

NEBULÆ, in astronomy, are certain spots in the heavens; some of which, by

AT THE VICTORY OF THE NILE ONLY 218 BRITISH WERE KILLED, AND 677 WOUNDED; AT TRAFALGAR, ONLY 420 KILLED, AND 1112 WOUNDED.

the discoveries of Dr. Herschel, are found to consist of clusters of telescopic stars, and others appear as mere luminous spots of different forms. Their distance and real size exceed all powers of human conception.——At a meeting of the British Association, "Sir John Herschel read a paper, entitled, 'On the reduced observations which he had made at the Cape of Good Hope, in 1835-6 and 7, on Double Stars and Nebulæ.' In this paper, illustrated by drawings, Sir John described the remarkable appearances of the southern heavens, and made striking *vivâ voce* additions to the brief technical notes which belonged to his catalogue of these stars. Some of the nebulæ were of extraordinary forms. In one they looked like bunches of grapes, and, in another, like bees swarming, so that it was impossible to define them. He also mentioned the vivid colours of some of the stars: one, in particular, was a fine blue, approaching to a verditer green. Some were so close as to be inseparable; and others seemed as if they were groups formed by family compact. He expressed a hope, that glasses of higher powers than had hitherto been attained by human art, might hereafter be applied to the examination of these double stars, so as to ascertain their nature and motions, whilst changing their positions in every way, and often so as to occult each other. He noticed generally of their distribution over the heavens, that there were fewer in the southern than in the northern hemisphere, and that in the former they mostly consisted of a larger and smaller star, which raised the question whether the lesser orbs were planetary, or had only a reflected light, like the earth's moon. Again, touching on the singular phenomena presented in the colours of these stars, generally yellow and red, he instanced the planet Mars, in our own system, as analogous to them, his red aspect being quite different from the yellow radiance whence he derives his brilliancy. The drawings of the nebulæ fully bore out Sir John's description of their being like wisps and tails thrown over the face of the heavens."—*Literary Gazette.*——In heraldry, the term *nebulæ* is used to describe a line drawn with undulations resembling the form of clouds; or a shield or charge divided by several such lines drawn across it.

NECES'SITY, the cause of that which cannot be otherwise, or whatever is done by a power that is irresistible; in which sense it stands opposed to freedom. The schools distinguish a physical necessity and a moral necessity; and a simple or absolute necessity, and a relative one. *Physical necessity*, is the want of a principle, or of a natural means necessary to act, which is otherwise called a physical or natural impotence. *Moral necessity*, is only a great difficulty, such as that arising from a long habit, a strong inclination, or violent passion. *Simple* or *absolute necessity*, is that which has no dependence on any state or conjuncture, or any particular situation of things, but is found every where, and in all the circumstances in which the agent can be supposed. *Relative necessity*, is that which places a man in a real incapacity of acting or not acting in those circumstances, and that situation he is found in, though in other circumstances, and in another state of things, he might act or not act. When a man's actions are determined by causes beyond his control, he acts from *necessity*, and is not a free agent.

NECK, in anatomy, that slender part situated between the head and the trunk of the body. The neck consists of the following parts: 1. the common integuments; 2. seven vertebræ; 3. a number of muscles which serve to move the head, the neck, the larynx, the pharynx, and the os hyoides; 4. a number of very large arteries, as the carotids, internal and external, and the vertebral ones; 5. large veins, as the jugular, internal and external, and the vertebral ones; 6. large nerves, the par vagum, the intercostals, the recurrent, the diaphragmatics, and the vertebral; 7. a part of the spinal marrow; 8. the aspera arteria, or trachea, particularly the larynx, in which is an eminence called the pomum adami; 9. the pharynx, with a part of the œsophagus; 10. the thyroide, with some other smaller glands.——*Neck of land*, a long narrow tract of land projecting from the main body, or a narrow tract connecting two larger tracts. ——Also, by *neck* we denote any thing long in the form of the neck, as the neck of a bottle, a violin, &c.

NECROL'OGY, a register of the deaths of benefactors in a monastery. Formerly also, what is now called *martyrology* was called *necrology*.——A register of distinguished persons who die within a certain period (not a record of their lives and actions, for that is *biography*) is also known by this term.

NEC'ROMANCY, a sort of magic practised by the Jews, Greeks, and Romans, by which they attempted to raise the dead or make them appear. The witch of Endor is a striking example of a bold and artful deception of this kind.

NEC'RONITE, in mineralogy, fetid felspar, a mineral which, when struck or pounded, exhales a fetid odour like that of putrid flesh.

NECROP'OLIS, in antiquity, the name given to some ancient cemeteries in the vicinity of large cities. It has also been iven to some of our modern ones.

NEC'TAR, in mythology, the supposed drink of the gods, and which was imagined to contribute much towards their eternal existence. It was, according to the fables of the poets, a most beautiful and delicious liquor, far exceeding any thing that the human mind can imagine. It gave a bloom, a beauty and a vigour, which surpassed all conception, and together with *ambrosia* (their solid food), repaired all the decays or accidental injuries of the divine constitution.——Also a sweet wine of Scio.

NEC'TARINE, a fruit differing from the common peach, of which it is a species, in having a smoother rind and a firmer pulp.

NECTA'RIUM, or NECTARY, in botany, that part of the corolla destined for the reception of the honey-juice of the plant: it is very various in its figure; being sometimes only a hollow in a petal, sometimes a little squama or tubercle, and sometimes a plain tube.

NEE'DLE, a steel implement used in sewing, embroidery, &c. Needles are made of various sizes, by a wire-drawing apparatus, then cut, the heads flattened and punched, the points filed, and the polish given by working quantities with emery-dust. At a late meeting of the British Association were exhibited several specimens illustrating the process of manufacturing needles by patent machinery, invented by Mr. S. Cocker, of Sheffield; by which it appeared that one hundred patent machines, which would occupy four rooms, each about 25 yards by 10, will, by the power of a six-horse steam-engine, be sufficient to produce 14,000,000 needles per week, and that the cost, by this method, would be no more than one penny per thousand!——*The Magnetical Needle*, in navigation, a needle touched with a magnet, or loadstone, and sustained on a pivot in the centre of the compass, where it assists the mariner by its general direction from pole to pole, or, as it is said in Europe, its pointing to the north. [See MAGNET.]

NEFASTI DI'ES, an appellation given by the Romans to those days wherein it was not allowed to administer justice, or hold courts.

NEGA'TION, in logic, a declaration that something is not, or the affirming one thing to be different from another; as, the soul is *not* matter.

NEG'ATIVE, in general, something that implies a negation: thus we say, negative quantities, negative signs, negative powers, &c. "Our words and ideas," says Dr. Watts, "are so unhappily linked together, that we can never know which are positive, which negative ideas, by the words that express them: for some positive terms denote a negative idea, as *dead*; and there are both positive and negative terms invented to signify the same and contrary ideas, as *unhappy* and *miserable*." If we say, such a thing is "not a man," or "not white," nothing is determined; the thing may be a dog, and it may be black: something of a positive character is necessary to express what it is.——*Negative* and *positive quantities*, in mathematics, are such as are, respectively, greater or less than nothing. In algebra, negative quantities are designated by —, and positive ones by +, so that — 4 + 4 = 0.——*Negative electricity*, that state of bodies in which they are deprived of some portion of the electricity which they naturally contain.——*Negative pregnant*, in law, a negative which implies an affirmation; as when a person denies having done a thing in a certain manner or at a certain time, as stated in the declaration; which implies that he did it in some manner.

NE'GRO (Latin, *niger*, black), a variety of the human species deriving their name from one of their most striking characteristics, their black colour. Their native region seems to be the central portion of Africa; but the Negro formation prevails also in Eastern and Western Africa, and, extending southwards, is most strongly marked in Guinea. The origin of the Negroes, and the cause of this remarkable difference from the rest of the human species, has been the source of much argument among naturalists. Mr. Boyle has observed, that it cannot be produced by the heat of the climate; for though the heat of the sun may darken the colour of the skin, yet experience does not show that it is sufficient to produce a true blackness, like that of the Negroes. In Africa itself many nations of Ethiopia are not black, nor were there any blacks originally in the West Indies. In many parts of Asia, under the same parallel with the African region, inhabited by blacks, the people are but tawney. He adds, that there are Negroes in Africa, beyond the southern tropic, and that a river sometimes parts nations, one of which is black and the other only tawney. Others allege that the gall of Negroes is black, and being mixed with their blood, is deposited between their skin and scarf-skin. This subject has lately been treated by Mr. R. M. Glover, who read to the British Association a paper on the functions of the *rete mucosum* and *pigmentum nigrum* in the dark races, and particularly in the Negro. The editor of the Year Book of Facts gives the following synopsis of it: "The degree of development of the rete mucosum and its pigment, determines the power of resisting the excessive heat of the sun in tropical climates, as evinced by the Negro (the type, in this respect, of the dark races), the European, and the Albino. The *modus operandi* must be discovered by an attention to both the physical and vital properties of this peculiar organization. The doctrine at present taught on the subject is, that the black skin absorbs more heat, but that the cutis vera of the Negro is not so liable to inflammation from a high temperature as that of a European from a lower temperature; and as the radiation of caloric from black must be greater than from white skins, the possessor of the former must cool more readily, and enjoy greater alternations of heat and cold. The former part of this doctrine is founded on the experiments and deductions of Sir Everard Home, as detailed in his paper in the Philosophical Transactions. A number of experiments detailed in the paper on the vesicatory powers of differently coloured substances, under the concentrated rays of the sun, contradicted the deductions of Sir E. Home, and hence arose the necessity of looking to the vital properties of the skin of the Negro, and the mode in which it is likely to be affected by the radiating and absorbing power of the pigment with which he is provided. Blumenbach and Winterbottom state, that the Negro perspires more readily and freely than the European; and Davy

says, 'In the inhabitants of the tropics, the exhalent arteries of the skin seem unusually expanded, and the whole apparatus peculiar to this secretion unusually developed; and I believe that the blood itself is less viscid, more fluid, and flows more readily through the vessels, so as to promote perspiration, and, by that means, contributing to the cooling of the surface. And being cooled itself, it contributes again, when it flows back upon the heart, to the reduction of the temperature of the internal parts.' Were the inhabitant of the tropics not possessed of this peculiar organization, his system could not respond to the stimulus of heat, by a determination of fluid towards the surface. Doubtless the excessive absorption of heat by his skin is useful in promoting this effect; but in the system qualified to respond to the stimulus of heat, and not in the organization of the skin alone, must an explanation be sought of the capability of the Negro to withstand the heat of the tropical regions."—It has long also been the prevailing opinion among naturalists that the Negro race is inferior, both in the organization and in intellectual powers, to the European; and that, in all the points of difference, it exhibits an approach to the Monkey tribes. This theory has led Dr. F. Tidemann, professor of anatomy and physiology in the university of Heidelberg, to institute a rigid inquiry into the validity of this opinion. He accordingly examined an immense number of brains of persons of different sexes, of various ages, and belonging to different varieties of the human race, both by ascertaining their exact weight, and also by accurate measurement of the capacity of the cavity of the cranium; and he has ascertained that no perceptible difference exists either in the average weight or the average size of the brain of the Negro and of the European: and the nerves are not larger, relatively to the size of the brain, in the former than in the latter. In the external form of the brain of the Negro a very slight difference only can be traced from that of the European; but there is absolutely no difference whatsoever in its internal structure, nor does the Negro brain exhibit any greater resemblance to that of the orang-outang than the brain of the European; excepting, perhaps, in the more symmetrical disposition of its convolutions. Many of the results which Dr. T. has thus deduced from his researches are at variance with the received opinions relative to the presumed inferiority of the Negro structure, both in the conformation and in the relative dimensions of the brain; and he ascribes the erroneous notions which have been hitherto entertained on these subjects chiefly to prejudice created by the circumstance that the facial angle in the Negro is smaller than in the European, and consequently makes, in this respect, an approach to that of the ape, in which it is still farther diminished. He denies that there is any innate difference in the intellectual faculties of these two varieties of the human race; and maintains that the apparent inferiority of the Negro is altogether the result of the demoralizing influence of slavery, and of the long continued oppression and cruelty which have been exercised towards this unhappy portion of mankind by their more early civilized, and consequently more successful, competitors for the dominion of the world. [See SLAVE-TRADE.]

NEHEMI'AH, a canonical book of the Old Testament, so called from the name of its author. Nehemiah was born at Babylon during the captivity, and succeeded Ezra in the government of Judah and Jerusalem. He was a Jew, and was promoted to the office of cup-bearer to Artaxerxes Longimanus, king of Persia; when the opportunities he had of being daily in the king's presence, together with the favour of Esther the queen, procured him the favour of being authorized to repair and fortify the city of Jerusalem, in the same manner as it was before its destruction by the Babylonians.

NE INJUSTE VEXES, in law, a writ that lies for a tenant who is distrained by his lord for more services than he is obliged to perform, being a prohibition to the lord not to distrain or vex his tenant.

NEMÆAN GAMES, in antiquity, celebrated games in Greece, deriving their name from Nemæa, a village between the cities of Cleonæ and Philus, where they were celebrated every third year. They were instituted in memory of Archemorus or Opheltes; but, after some intermission, were revived by Hercules, in honour of Jupiter, after his victory over the Nemæan lion. The exercises were chariot races, and all the parts of the Pentathlon.

NEM. CON. for *Nemine contradicente* (no one opposing), a term chiefly used in the House of Commons when any thing is carried without opposition.——*Nemine dissentiente* (no one dissenting), are terms similarly applied in the House of Lords.

NEM'OLITE, in mineralogy, an arborized stone.

NEOD'OMODE, in ancient Greece, a person newly admitted to citizenship.

NEOL'OGY, the introduction of new words into a language. The progress of science has of late years necessarily given rise to many *neologisms*; but the practice of coining new words to express old ideas—one of the sins of careless writers—cannot be too severely reprehended. Another innovation, not less objectionable, is that of making a modern Babel of our speech, by interlarding it with foreign terms and phrases. Those who thus delight in showing their learning, should remember that hybrid phraseology betrays a sad ignorance of their vernacular tongue, and exposes them to the charge of silly affectation.

NEOME'NIA, in antiquity, a festival observed at the beginning of a lunar month in honour of all the gods, but particularly Apollo.

NE'OPHYTE, a new convert or proselyte: a name given by the early Christians to such as had recently been converted from paganism.

NEPEN'THE, in antiquity, a kind of magic potion, mentioned by Greek and Roman poets, which was supposed to make persons forget their sorrows and misfortunes. It was the juice or infusion of a plant now unknown: Homer says it grew in Egypt, and further observes, that Helen made use of it to charm her guests, and make them forget their miseries and their pains.

NEPH'ELINE, a mineral found mixed with other substances, primitive or volcanic, in small masses or veins. It is white or yellow.

NEPH'RITE, in mineralogy, a subspecies of jade, occurring in granite and gneiss, remarkable for its hardness and tenacity. It is of a leek green colour, and was formerly worn as a remedy for diseases of the kidneys.——*Nephritic wood*, a species of fine-grained compact wood, grown in South America. It gives a blue colour to water, spirits of wine, &c.; but which is changed to yellow by acids, and again to blue by alkalies.

NEPHRI'TIS, in medicine, an inflammation of the kidneys. Hence *Nephritics*, medicines proper for diseases of the kidneys, particularly for urinary calculi.

NE PLUS ULTRA, *i.e.* no farther, the extremity, or utmost extent to which any thing can go.

NEPTUNA'LIA, in antiquity, feasts observed by the Romans in honour of Neptune. They differed from the *Consualia*, in which that god was considered as presiding over horses and the manege; whereas the *Neptunalia* were feasts of Neptune, in his more general character as god of the sea.

NEPTU'NIAN, or NEP'TUNIST, one who adopts the theory that the substances of which the earth is composed were formed from aqueous solution; opposed to the *Plutonic* theory, which attributes the earth's formation to the action of fire.

NE'REIDS, in mythology, sea-nymphs, daughters of Nereus and Doris, and celebrated for their beauty. In ancient monuments the Nereids are represented as riding upon sea-horses, sometimes with the human form entire, and at others with the tail of a fish.

NERITITE, a petrified shell of the genus *Nerita*.

NE'RIUM, in botany, a genus of plants class 5 *Pentandria*, order 1 *Monogynia*. The species are shrubs or trees, as the sweet-scented rose-bay, rhododendron, &c.

NERVES, long, white, medullary cords, which pass in pairs from the brain and the spinal marrow, as instruments respectively of sensation and volition; of which nine pair proceed from the brain, and thirty from the spine. They spread over the body like fine net-work. Formerly the word *nerve* meant a *sinew*: this accounts for the opposite meanings of the word *nervous*, which sometimes signifies strong, sinewy; and sometimes weak and irritable.

NER'VOUS SYSTEM, the arrangement within an animal of the brain, spinal marrow, and nerves, constituting the means of perception, volition, and muscular action. In treating of the physiology of the nervous system, Dr. Hooper has the following remarks:—"In the living man there is an immaterial thinking substance, *or mind*, constantly present, and every phenomenon of thinking is to be considered as an affection or faculty of the mind alone. But this immaterial and thinking part of man is so connected with the material and corporeal part of him, and particularly with the nervous system, that motions excited in this, give occasion to thought, and thought, however occasioned, gives occasion to new motions in the nervous system. This mutual communication, or influence, is assumed with confidence as a fact: but the mode of it we do not understand, nor pretend to explain; and are therefore not bound to obviate the difficulties that attend any of the suppositions that have been made concerning it. The phenomena of the nervous system occur commonly in the following order: The impulse of external bodies acts upon the sentient extremities of the nerves; and this gives occasion to perception or thought, which as first arising in the mind, is termed *sensation*. This sensation, according to its various modifications, gives occasion to *volition*, or the willing of certain ends to be obtained by the motion of certain parts of the body; and this volition gives occasion to the contraction of muscular fibres, by which the motion of the part required is produced. As the impulse of bodies on the sentient extremities of a nerve does not occasion any sensation, unless the nerve between the sentient extremity and the brain be free; and as, in like manner, volition does not produce any contraction of muscles, unless the nerve between the brain and muscle be also free; it is concluded from both these facts, that sensation and volition, so far as they are connected with corporeal motions, are functions of the brain alone, and it is presumed, that sensation arises only in consequence of external impulse producing motion in the sentient extremities of the nerves, and of that motion being thence propagated along the nerves to the brain; and, in like manner that the will, operating in the brain only, by a motion begun there, and propagated along the nerves, produces the contraction of muscles." * * * "From this view of the parts of the nervous system, it appears, that the beginning of motion in the animal economy, is generally connected with sensation; and that the ultimate effects of such motion are chiefly actions depending immediately upon the contraction of moving fibres, between which and the sentient extremities the communication is by means of the brain." Of the NERVOUS FLUID, or *nervous principle*, the same intelligent author thus writes:—"The vascularity of the cortical part of the brain and of the nerves themselves, their softness, pulpiness, and natural humid appearance, give reason to believe that between the medullary particles of which they are principally composed, a fine fluid is constantly secreted, which may be

IT IS ASSERTED, THAT WARM BATHING, VEGETABLE DIET, EXERCISE, AND RECREATION, ARE THE BEST REMEDIES FOR NERVOUS DISEASES.

fitted to receive and transmit, even more readily than other fluids do, all impressions which are made on it. It appears to exhale from the extremities of the nerves. The lassitude and debility of *muscles* from too great exercise, and the dulness of the sensorial organs from excessive use, would seem to prove this. It has no *smell* nor *taste;* for the cerebrine medulla is insipid and inodorous. Nor has it any colour, for the cerebrum and nerves are white. It is of so subtile a *consistence* as never to have been detected. Its *mobility* is stupendous; for in less than a moment, with the consent of the mind, it is conveyed from the cerebrum to the muscles like the electric matter. Whether the nervous fluid be carried from the organ of sense in the *sensorial* nerves to the cerebrum, and from thence in the *motory* nerves to the muscles, cannot be positively affirmed. The *constituent principles* of this liquid are perfectly unknown, as they cannot be rendered visible by art or proved by experiment. Upon making a ligature upon a nerve, the motion of the fluid is interrupted, which proves that something corporeal flows through it. It is therefore a weak argument to deny its existence because we cannot see it; for who has seen the matter of heat, oxygen, azote, and other elementary bodies, the existence of which no physician in the present day doubts? The *electric matter,* whose action on the nerves is very great, does not appear to constitute the nervous fluid; for nerves exhibit no signs of spontaneous electricity; nor can it be the *magnetic matter,* as the experiment of Gavian with the magnet demonstrates; nor is it *oxygen,* nor *hydrogen,* nor *azote;* for the first very much irritates the nerves, and the other two suspend their action. The nervous fluid therefore, is an *element* sui generis, which exists and is produced in the nerves only; hence, like other elements, it is only to be known by its effects. The pulpous softness of some nerves, and their lax situation, does not allow them and the brain to act on the body and soul only by *oscillation.* Lastly, a tense chord, although tied, oscillates. The use of the nervous fluid, is, 1. it appears to be an intermediate substance between the body and the soul, by means of which the latter thinks, perceives, and moves the muscles subservient to the will. Hence the body acts upon the soul, and the soul upon the body. 2. It appears to differ from the *vital principle;* for parts live and are irritable which want nerves, as bones, tendons, plants, and insects."

NEST, a bed or habitation where animals rear their young. The exquisite ingenuity which various creatures display in constructing their nests has always been a subject of deserved admiration. In various parts of this volume we have had occasion to describe some of these ingenious proofs of animal instinct: it is therefore unnecessary here to give examples.

NESTO'RIANS, a sect of Christians still said to be subsisting in some parts of the Levant, whose patriarch resides in Seleucia; their principal see is in Persia, and their distinguishing tenet is, that Mary, though the mother of Jesus Christ, is not the mother of God.

NET, or NEAT, in commerce, that which is pure, and without adulteration or deduction. Hence we say a *net* rent, &c. A *net* produce is a term used to express any commodity, all *tare* and charges deducted.

NET'-MAKING, a useful art, by which fibrous materials are knotted in a regular manner, and continued over a large surface; as in the nets for catching fish, &c.

NET'TINGS, in a ship, a sort of gratings made of small ropes, brought together with rope-yarn or twine, and fixed on the quarters, the tops, &c.

NET'TLE, in botany, the *Urtica* of Linnæus, a well-known perennial. The species are mostly herbaceous, and are usually covered with extremely fine, sharp, tubular hairs, placed upon minute vesicles, filled with an acrid and caustic fluid, which, by pressure, is injected into the wounds caused by the sharp-pointed hairs: hence arises the well-known stinging sensation when these plants are incautiously handled. It is accounted diuretic, and is good as a purifier of the blood. "The nettle, is generally visited by exterminating warfare among agriculturists: nevertheless it has its uses, and the Dutch have contrived to make it serviceable, and even advantageous. The young leaves are good eating, the stem is woven into coarse stuffs, and the jockeys mix the seed with the food of horses, in order to give them a sleek coat; and the roots, when washed, and mixed with alum or common salt, give a yellow dye. It is a wholesome food for horned cattle when young; it will grow in the most arid soil, demands no cultivation, for it stands all weathers, and sows itself. It may be cut two or three times in the summer, and is one of the earliest of plants: when cut for hay, it must not be too old, for then the cattle refuse to eat the dried stalks."—*Athenæum.*

NEUROL'OGY, in medicine, a description of the nerves of animal bodies, or the doctrine of the nerves.

NEUROP'TERA, an order of insects in the Linnæan system, including those which have four transparent, naked wings, reticulated with veins, as the dragon fly, the lion ant, &c.

NEURO'SES, in medicine, nervous disorders; the second class of diseases in Cullen's Nosology.

NEUROT'OMY, in anatomy, the art or practice of dissecting the nerves.

NEU'TER, in grammar, a gender of nouns for names which are neither masculine nor feminine.——*Neuter verbs,* by some grammarians called *intransitive verbs,* are those which govern nothing, and that are neither active nor passive. When the action expressed by the verb has no object to fall upon, but the verb alone supplies the whole idea of the action, the verb is said to be neuter; as, *I sleep, we walk,* they *stand still.*

NEUTRAL'ITY, in politics, that state of

a nation in which it does not take part, directly or indirectly, in a war between other nations; but from such neutral position arise certain rights and obligations towards the belligerents, through the infraction of which the neutral power frequently becomes involved in hostilities with one or the other of the belligerents.

NEUTRALIZATION, in chemistry, the process by which an acid and an alkali are so combined as to disguise each other's properties. Thus, when sulphuric acid and soda are mixed together, the properties either of the one or the other preponderate, according to the properties of each; but there are certain proportions, according to which, when they are combined, they mutually destroy or disguise the properties of each other, so that neither predominates, or rather so that both disappear. When substances thus mutually disguise each other's properties, they are said to *neutralize* each other.

NEUTRAL SALTS, in chemistry, those salts which partake of the nature of both an acid and an alkali.

NEWSPAPER, a periodical publication which appears on some stated day or days in the week, containing an account of the political and domestic occurrences of the time, and which is capable of doing good or mischief, according as it is honestly or dishonestly, ignorantly or intelligently conducted. The London newspapers, as Mr. M'Culloch very truly observes, have become remarkable for the great mass and variety of matter which they contain, the rapidity with which they are printed and circulated, and the accuracy and copiousness of their reports and debates. These results are obtained by a large expenditure and considerable division of labour. The reports of parliamentary proceedings are obtained by a succession of able and intelligent reporters, who relieve each other at intervals of three quarters of an hour, or occasionally less. A newspaper cannot aim at copious and correct reports with less than ten reporters for the House of Commons; and the expense of that particular part of a morning newspaper's establishment exceeds 3000*l.* per annum.—A writer in Frazer's Magazine, who appears to know his subject well, says, "the public who know nothing of the details of a newspaper, have a false notion of the mode in which reports are given. They imagine they are taken in short hand, and then faithfully transcribed from the notes of the reporter. Short hand is, however, little used by good reporters, except for striking passages of a speech which are to be given verbatim. Were the whole of a long debate in the House of Commons to be given from short hand notes, the quantity would fill a paper three times as large as the *Times*, and neither the speaker nor the reader would be the gainer. Verbatim speeches would contain a great deal of useless verbiage, and, in many cases, much nonsense which the speakers themselves would be sorry to see in print. Reporters generally take the leading points of a debate; and when they write out their report, they will fill up the chasms partly from recollection, and partly from the necessary connexion of words which the passages themselves supply, and which are the more or less those which the speaker would have used, according to the intimacy of the reporter with his style." On the nights of prolonged debate, when the houses sit late, some of the reporters may be compelled to go back and take what is called a *double turn;* and so active and able are many of these gentlemen, that it is not an unfrequent thing for one reporter to supply from the notes of three quarters of an hour, to the paper upon which he is engaged, from a column and a half to two columns of closely printed matter.—By the act 38 Geo. 3. c. 78, it is declared, that no person shall print or publish a newspaper until an affidavit has been delivered at the stamp-office, stating the name and places of abode of the printer, publisher, and proprietor; specifying the amount of the shares, the title of the paper, and a description of the building in which it is intended to be printed. A copy of every newspaper is to be delivered within six days to the commissioners of stamps, under a penalty of 100*l.* And persons publishing papers without the name and abode of the printer may be apprehended, and carried before a magistrate; and a peace officer, by warrant of a justice of peace, may enter any place to search for printing presses, types, &c. kept without the notice required by the act, and may carry them off, with all printed papers there found.—It appears that the first newspaper published in modern Europe made its appearance at Venice, in 1536; but the jealousy of the government would not allow of its being printed; so that, for many years, it was circulated in manuscript! It would seem that newspapers were first issued in England by authority, in 1588, during the alarm occasioned by the approach of the Spanish armada to our shores; in order, as was stated, by giving real information, to allay the general anxiety, and to hinder the dissemination of false and exaggerated statements. From this era, newspapers, of one sort or other, have, with a few intermissions, generally appeared in London; sometimes at regular, and sometimes at irregular intervals. For more than a century past they have gone on gradually increasing in size, as well as in commercial and political importance; and when the late reductions in the advertisement and stamp duties took place, an extraordinary impetus was given to their circulation. Thus encouraged, the "broad sheets" grew still broader; till at length, when overcharged with matter, the "leading journal" occasionally issued its gratuitous supplementary papers, equalling in size their parent original, thereby astounding the world by the vastness of their contents, and puzzling many an anxious quidnunc, who wandered over the mighty mass of print uncertain where to fix his inquiring eye. For our own part, although we cannot but admire the

SOME PAPERS SEND REPORTERS WITH THE ARMY. ONE HAS NOW ONE REPORTERS WITH THE ARMY.

THE LEADING FRENCH PAPERS DIFFER MUCH FROM THOSE OF BRITAIN AND THE UNITED STATES, BY THE ENTIRE ABSENCE OF ADVERTISEMENTS.

mechanical and mental power which calls these gigantic efforts of the press into existence, we more than doubt the necessity or policy of their frequent repetition.

NEW STYLE, the method of reckoning the days of the year in accordance with the Gregorian Calendar, which adjusts the odd hours and minutes, by which the earth's revolution exceeds 365 days, and renders celestial phenomena and terrestrial reckoning equal.

NEWTO'NIAN SYS'TEM, or *Newtonian Philosophy*, a phrase often applied to the Copernican or Solar system, which was generally adopted before Newton's time; and by others applied to the laws of planetary motion, first promulgated by Kepler and Hooke; but strictly applicable only to certain geometrical and analytical demonstrations of those known laws, as developed by the genius and industry of Sir Isaac Newton. The chief parts of the Newtonian philosophy are explained by the author in his "Principia."

NICE'NE CREED, in ecclesiastical affairs, a particular creed, or confession of faith, drawn up by the clergy in the council of Nice, and since adopted by the church of England.

NICHE, in architecture, a hollow or recess in a wall, for the reception of a statue or bust.

NICK'EL, in mineralogy, a hard silver-like metal, which, combined with copper, forms the *petit-or* of the shops; it is slightly magnetic, and forms a large proportion of the meteoric masses which fall to the earth. The ore in which it was first found, and from which it is principally obtained at present, is the *Kupfer nickel*, or sulphuret of nickel, mixed also with arsenic, iron, and cobalt.——*Sulphuret of nickel* is of a yellow colour, like iron pyrites, and brittle.——*Chloride of nickel* is prepared by evaporating the muriate to dryness. When calcined in a retort, one portion, of an olive-green colour, remains in the bottom of the vessel, while another sublimes, and crystalizes in small brilliant plates of a gold-yellow colour; these are the *deutochloride*. The nitric and nitro-muriatic acids are the most appropriate solvents of nickel.

NIC'OTINE, in chemistry, a peculiar principle, highly poisonous, obtained from tobacco. It is precipitated from its solution by the tincture of nutgalls.

NIC'TATING, or NICTITATING MEM'BRANE, a very thin and fine skin, chiefly found in the bird and fish kind, which covers the eyes of these creatures, sheltering them from dust or from too much light, yet is so thin and pellucid that they can see pretty well through it.

NIDIFICA'TION, the act or operation of building a nest, and the hatching and feeding of young in the nest.

NI'DUS, among naturalists, signifies a nest, or proper repository for the eggs of birds, insects, &c. wherein the young of these animals are hatched and nursed.

NIGHT, that part of the diurnal period during which either hemisphere is turned away from the sun; the time of darkness. Night was originally divided by the Hebrews, and other eastern nations, into three parts, or watchings. The Romans, and afterwards the Jews from them, divided the night into four parts, or watches, the first of which began at sunset and lasted till nine at night, according to our way of reckoning; the second lasted till midnight; the third till three in the morning; and the fourth ended at sunrise. In scripture language, this word is sometimes used for the times of heathenish ignorance, as Rom. xiii. 12; for adversity and affliction, as Isaiah xxi. 12; and for death, as John ix. 4.

NI'GHTINGALE, in ornithology, a species of *motacilla;* a bird more eminent for the sweetness of its note, than for its beauty. It is of the size of the linnet, but in shape it more resembles the red-breast; the head is small, the eyes are large, and their iris pale; the beak is dusky, slender, and moderately long; the head, neck, and back are of a greyish-brown; the upper parts of the wings, and about the tail, have a reddish tinge mixed with this; and the throat, breast, and belly are of a pale ash colour. This bird is well known in the southern counties of England for the fineness of its tones, especially in the evening. It is equalled only by the sky-lark in sprightliness, compass, and execution; but the latter is greatly inferior in mellowness and plaintiveness, in which two qualities the wood-lark alone approaches the nightingale. It is the constant theme of the eastern poets; and by these is represented as attached, in a most extraordinary degree, to the *rose*, their favourite flower. It is very generally supposed that the nightingale will live but a very short time in a state of confinement. Our own experience, however, proves the contrary; having kept one upwards of three years in a cage, which delighted us with its song during eight months of the year. It was regularly fed with meal worms, as well as with boiled eggs and raw meat chopped very fine. But this is nothing to what Dr. Weissenborn relates. He says that a nightingale which had been caught in Germany in its adult state, lived nearly thirty years confined in a cage. One of the bird's owners, a tradesman at Weimar, who kept it for sixteen years, paid great regard to the bird's cleanliness, and *always* fed it on *pupæ* of ants, either fresh or dry, according to the season, with a few meal worms a day; and whenever the bird appeared unwell, a spider, if it could be obtained. It sung beautifully throughout the year, except in April and May, when it moulted.

NI'GHTSHADE, or *Deadly Nightshade*, in botany, a poisonous plant, bearing a bell-shaped corolla. [See ATROPA.]——The *Atropa belladonna* is supposed to have been the plant which the Roman soldiers, urged by hunger, ate in the Parthian war. Plutarch tells us, that on this occasion it produced loss of the memory and senses; and that the unfortunate victims of it were prone to move every stone that they met with, as though in some important pursuit;

till, ultimately, the poison subdued their strength, and they died. Buchanan also relates, that the Scots mixed the juice of this plant with the food which they supplied to the Danes, their invaders. It had an intoxicating effect, and the Scots became their destroyers. The deleterious principle of the *belladonna* has been ascertained by Vauquelin to be a bitter, nauseous matter, soluble in spirit of wine, forming an insoluble combination with tannin, and yielding ammonia when burnt.

NI'GHTMARE. [See INCUBUS.]

NI'HIL CA'PIAT PER BRE'VE, in law, the judgment given against the plaintiff in an action either in bar thereof, or in abatement of the writ.——*Nihil dicit*, a failure in the defendant to put in an answer to the plaintiff's declaration, &c. by the day assigned for that purpose, by which omission judgment of course is had against him.——*Nihil debet*, the usual plea in an action of debt: but it is no plea in an action of covenant, in a breach assigned for non-payment of rent, &c.——*Nihil habuit in tenementis*, a plea that can be pleaded only in an action of debt brought by a lessor against a lessee without deed.

NIM'BUS, in antiquity, the circle of luminous rays observed on certain medals, round the heads of emperors and demigods, answering to the *glory* painted round the head of our Saviour, or a saint.——*Nimbus*, is also a word used to express that combination of clouds which condense into rain.

NI'SI PRI'US, in law, a term often given to trials by jury in civil actions. By it is meant a commission directed to the judges of assize, empowering them to try all questions of fact issuing out of the courts of Westminster, that are then ready for trial; and as by the course of the court all causes are heard at Westminster, the clause is added in such writs, *Nisi prius justiciarii domini regis ad assisas capiendas venerint;* that is, Unless before the day fixed the justices come thither to hold assizes—whence the writ, as well as the commission, have received the name.

NI'TRATES, in chemistry, salts formed of nitric acid with salifiable bases, as the nitrate of potash, soda, &c.

NI'TRATE OF SIL'VER, in chemistry, is prepared by saturating pure nitric acid with pure silver, evaporating the solution, and crystalizing the nitrate. When swallowed, it is a very powerful poison; but it may be readily counteracted by the administration of a dose of sea-salt, which converts the corrosive nitrate into the inert chloride of silver. Properly prepared, it forms an excellent indelible ink for writing on linen with a pen.

NI'TRE, or SALT PETRE, a simple salt, crystalized, pellucid, but somewhat whitish, and of an acrid bitterish taste. It is found immersed in imperceptible particles in earthy substances, as the particles of metals in their ores; but sometimes it is gathered native and pure, in the form of an efflorescence, or shapeless salt, either on its ore, or on old walls. The earth from which nitre is obtained, both in Persia and the East Indies, is a kind of marl, found on the bare sides of hills exposed to the northern or eastern winds, and never in any other situation. The people of those countries collect large quantities of this earth, and having a large and deep pit, lined with a hard and tenacious kind of clay, they fill it half full of water, and into this they throw the earth; when this is broken and mouldered to powder, they add more water, and mixing the whole together, suffer it to remain four or five days: after this, they open a hole made in one of the sides of the pit, which lets out all the clear water into a channel of about a foot wide, which is also lined with clay, and through which it runs into another very wide and shallow pit, which is prepared in a level ground, secured by slight walls on all but the north-east side, and open to the sun at the top: here the water evaporates by degrees; and the salt which it had imbibed from the earth crystalizes into small brownish-white, hexahedral, but usually imperfect crystals. Much of the nitre in common use is, however, in suitable situations, which tend to produce nitric acid, particularly where animal matter becomes decomposed by the air, such as slaughter-houses, drains, and the like. Nitre is of great use in the arts and in various manufactures: besides being the basis of gunpowder, it is employed in making white glass, and is of the same use as common salt in preserving meats. It is also of considerable importance in medicine, as a febrifuge, diuretic, and antiphlogistic remedy.——Several interesting phenomena, arising from the crystalization of nitre after fusion, are given by Mr. H. F. Talbot, in the Philosophical Magazine, to which the reader is referred.

NI'TRIC ACID, a heavy yellow liquid, procured by the chemical combination of oxygen and nitrogen gas. The nitric acid is of considerable importance in the arts. Diluted with the sulphuric and muriatic acids it forms the well known liquid, *aqua-fortis*, which is used for the purpose of etching on copper, &c.; also as a solvent of tin to form with that metal a mordant for some of the finest dyes. It is also of great use in medicine and various chemical processes.

NI'TROGEN, or AZOTE, in chemistry, the principle of nitre in its gaseous state, which constitutes four-fifths of the volume of atmospheric air, and is remarkable for the properties of extinguishing flame and animal life. [See AZOTE.]——In a paper, read to the Royal Society last year, entitled "An Experimental Inquiry into the influence of Nitrogen on the Growth of Plants," by R. Rigge, Esq., it was uniformly found that barley and other grains germinated earliest when containing the largest quantity of nitrogen; this quantity being always greatest in the spring, and a powerful agent in the chemical action going on in the growth of the plant. An excess of nitrogen is always found in sap-wood, and largest in

NITRE WAS USED IN THE COMPOSITION OF THE GREEK FIRE, BECAUSE IT KEPT ALIVE THE SULPHUR, RESIN, AND OTHER COMBUSTIBLES.

those timbers which grow the quickest, and smallest in hard woods: for example; in satin-wood, it is almost inappreciable; so, likewise, in Malabar teak, and in good old English oak, it is very small. It appears also, that nitrogen and residual matter are invariably the most abundant in those parts of plants which perform the most important offices in vegetable physiology; and hence the author is disposed to infer that nitrogen (being the element which more than any other is permanent in its character) when coupled with residual matter, is the moving agent, acting under the living principle of the plant, and moulding into shape the other elements. The method of ultimate analysis adopted by the author, enables him, as he conceives, to detect very minute errors, and therefore to speak with certainty as to the accuracy and value of every experiment.

NI'TRO MURIAT'IC ACID, in chemistry, a compound of nitric and muriatic acids: the *aqua regia* of the alchemists, which has the property of dissolving gold and platina.

NI'TROUS OX'YDE, a gas which, inhaled by respiration, produces a sense of exhilaration and intoxication. It is popularly called *laughing gas*, because it produces a certain degree of pleasurable excitement, often accompanied by laughter, in those who inhale it. It was discovered by Dr. Priestley, in 1772, but was first accurately investigated by Sir H. Davy, in 1779, who describes its effects upon himself as follows:—"Having previously closed my nostrils and exhausted my lungs, I breathed four quarts of nitrous oxyde from and into a silk bag. The first feelings were similar to giddiness; but in less than half a minute, the respiration being continued, they diminished gradually, and were succeeded by a sensation analogous to gentle pressure on all the muscles, attended by a highly pleasurable thrilling, particularly in the chest and the extremities. The objects around me became dazzling, and my hearing more acute. Towards the last inspiration the thrilling increased, and at last an irresistible propensity to action was indulged in. I recollect but indistinctly what followed: I know that my motions were various and violent. These effects very soon ceased after respiration. In ten minutes I had recovered my natural state of mind. The thrilling in the extremities continued longer than the other sensations. Almost every one who has breathed this gas has observed the same things. On some few, indeed, it has no effect whatever, and on others the effects are always painful." To this we may add, that the excitement it occasions is not unfrequently productive of consequences dangerous to life, and therefore the experiment should not be indulged in.—The best mode of procuring it is to expose nitrate of ammonia to the flame of an argand lamp, in a glass retort. When the temperature reaches 400° Fahrenheit, a whitish cloud will begin to project itself into the neck of the retort, accompanied by the copious evolution of gas, which must be collected over mercury for accurate researches, but for common experiments may be received over water.

NIZAM', the title of great officers of state in the Asiatic governments.

NO'BILES, among the Romans, were such as had the *jus imaginum*, or the right of using the pictures or statues of their ancestors; a right which was allowed only to those whose ancestors had borne some curule office, that is, had been curule ædile, censor, prætor, or consul. For a long time, none but the *Patricii* were the *Nobiles*, because no person but of that superior rank could bear any curule office. The Roman nobility, by way of distinction, wore a half moon upon their shoes, especially those of patrician rank.

NOBIL'ITY, in civil institutions, rank conferred by express authority of the governing power. British nobility consists only of five degrees, *viz.* that of a duke, marquis, earl, viscount, and baron [each of which see under their proper articles.] In Britain these titles are only conferred by the sovereign, and that by patent, in virtue of which it becomes hereditary. The privileges of the nobility are very considerable: they are all esteemed hereditary counsellors of the crown, and are privileged from all arrests, unless for treason, felony, breach of the peace, condemnation in parliament, and contempt of the sovereign authority. They enjoy their seats in the house of peers by descent, and no act of parliament can pass without their concurrence: they are the supreme court of judicature, and even in criminal cases give their verdict upon their honour, without being put to their oath.—An hereditary nobility is found in the infancy of most nations, ancient and modern. Its origin is to be attributed to various causes; for the most part to military despotism; in some cases, to the honours paid to superior ability, or to the guardians of the mysteries of religion. The priestly nobility of the remotest antiquity has everywhere yielded to the superiority of military chieftains. In France and Germany, the first hereditary nobility begins with the downfall of the Carlovingian dynasty; in England, with the conquest of the Normans, in the tenth and eleventh centuries; and was afterwards spread over all Europe; for, since that time, dignities, as well as lands, have become hereditary.—A cotemporary writer has remarked, that "it is a curious particular in the history of nobility, that among the natives of Otaheite, rank is not only hereditary, but actually descends to the son, to the degradation of the father while yet alive: thus, he who is a nobleman to-day, if a son be born to him, is a commoner to-morrow, and his son takes his rank."

NO'BLE, in numismatics, a gold coin value 6*s.* 8*d.* which was struck in the reign of Edward III., and stamped with the impression of a ship, which emblem is supposed to have been commemorative of a naval victory obtained by Edward over the French at Sluys, in 1340.

TO THOSE WHO ARE SUBJECT TO A DETERMINATION OF BLOOD TO THE HEAD, THE INHALING OF "LAUGHING GAS" IS A DANGEROUS EXPERIMENT.

NOCTILU'CA, a species of phosphorus which shines in darkness without the previous aid of solar rays.

NODES, in astronomy, the two points in which the orbit of a planet intersects the ecliptic. These are called the ascending and descending nodes. The line in which the two circles intersect is called "the line of the nodes." This line, as it refers to all the planets, shifts its situation from east to west, contrary to the order of the signs.——*Node*, in surgery, a hard tumour rising out of a bone.——*Node*, in dialling, a point or hole in the gnomon of a dial, by the shadow or light of which is shown either the hour of the day, or the parallels of the sun's declination, &c.

NO'LI ME TAN'GERE, in medicine, a species of herpes affecting the skin and cartilages of the nose, very difficult to cure, because it is retarded by most applications.——In botany, a plant of the genus *Impatiens*.

NO'MADS, or NO'MADES, a name given to nations whose chief occupation consists in feeding their flocks, and who have no fixed place of abode, but shift their residence according to the state of pasture. Nomadic tribes are seldom found to quit their wandering life, until they are compelled to do so by being surrounded by tribes in settled habitations, or unless they can make themselves masters of the settlements of a civilized nation.

NOM DE GUERRE, a French term commonly used to denote an assumed or fictitious name.

NO'MANCY, the art or practice of divining the destiny of persons by the letters which form their names.

NOM'BRIL, in heraldry, the centre of an escutcheon.

NOMENCLA'TOR, in Roman antiquity, was usually a slave who attended upon persons that stood candidates for offices, and prompted or suggested to them the names of all the citizens they met, that they might address them by their names; which, among that people was esteemed an especial act of courtesy.

NO'MENCLATURE, a systematic classification of words, by which they designate the divisions and dependencies of a science.

NOM'INATIVE, in grammar, the first case of nouns that are declinable. The nominative case is the subject of a proposition or affirmation: thus, in the words, "the house is repaired," *house* is the nominative of the noun; but in the words "repair the house," which contain no proposition or affirmation, *house* is used in the accusative case.

NOMOPHY'LACES, in antiquity, Athenian magistrates who were appointed to see the laws executed.

NON (Latin, *not*). This word is used in the English language as a prefix only, for giving a negative sense to words; as in *non*-ability, *non*-residence, *non*-payment, *non*-appearance, and the like.

NON'AGE, the time of life before a person, according to the laws of his country, becomes of age to manage his own concerns.

NON-ASSUMP'SIT, in law, is a general plea in a personal action, by which a man denies that he has made any promise.——The following legal terms or phrases, beginning with *non*, properly follow in this place; viz.——*Non compos mentis*, a phrase to denote a person's not being of sound memory and understanding. A distinction is made between an idiot and a person *non compos mentis*, the former being constitutionally destitute of reason, the latter deprived of that with which he was naturally endowed: but, to many purposes, the law makes no distinction between the two.——*Non distringendo*, a writ granted not to distrain.——*Non est inventus*, that is, literally, "He has not been found:" the answer made by the sheriff in the return of the writ, when the defendant is not to be found in his bailiwick.——*Non liquet*, "it does not appear;" a verdict given by a jury, when a matter is to be deferred to another day of trial.——*Non obstante*, a clause in statutes and letters patent, importing a license from the king to do a thing which at common law might be lawfully done, but being restrained by act of parliament, cannot be done without such license.——*Non pros*, or *Nolle prosequi*, is a term made use of to signify that the plaintiff will proceed no farther in his action. In criminal cases it can only be entered by the attorney-general.

NON-CONDUC'TOR, a substance, or fluid, which does not conduct or transmit another substance or fluid, or which transmits it with difficulty. Thus, glass is a non-conductor of the electric fluid; wool is a non-conductor of heat. [See ELECTRICITY.]

NONCONFORM'IST, one who refuses to conform to the rites and worship of the established church. The name was at first particularly applied to those clergymen who were ejected from their livings by the act of uniformity in 1662. [See DISSENTERS.]

NONES, in the Roman calendar, the fifth day of the months January, February, April, June, August, September, November, and December; and the seventh of March, May, July, and October; these four last months having six days before the nones, and the others only four. March, May, July, and October had six days in their nones; because these alone, in the ancient constitution of the year by Numa, had thirty-one days a-piece, the rest having only twenty-nine, and February thirty: but when Cæsar reformed the year, and made other months contain thirty-one days, he did not allot them six days of nones. The nones, like the calends and ides, were reckoned backwards.

NON-NAT'URALS. Under this term ancient physicians comprehended air, meat and drink, sleep and watching, motion and rest, the retentions and excretions, and the affections of the mind; or, in other words, those principal matters which do not enter into the composition of the body, but at the same time are necessary to its existence.

NON'SUIT, in law, the default, or non-

appearance of the plaintiff in a suit, when called in court, by which the plaintiff is presumed to signify his intention to drop the suit; he is therefore *nonsuited*, that is, his non-appearance is entered on the record, and this entry amounts to a judgment of the court that the plaintiff has dropped the suit.

NON-JURORS, the adherents of James II. who refused to take the oath of allegiance to the government and crown of England at the Revolution, when James abdicated, and the Hanoverian family was introduced.

NOON, mid-day, or twelve o'clock, called *apparent* as shown by a sun-dial, and *real* as shown by a clock.

NORTH POLE, in astronomy, a point in the northern hemisphere of the heavens, ninety degrees every way distant from the equinoctial.——*North Pole Star*, a star in the tail of *Ursa minor*, so called from its not being above two degrees and a half distant from the Pole.

NORTH-WEST PASSAGE. The "North Polar Expeditions" undertaken by the enterprising mariners of England, from the year 1496, when Cabot penetrated into Hudson's bay, had continued to increase in interest with every fresh attempt; till, at length, Parliament offered a premium of 20,000*l.* to the first navigator who should accomplish the north-west passage, and 5000*l.* to the first vessel which should reach the north-pole and pass it. In 1819, the prince regent offered prizes of from 5000*l.* to 15,000*l.* to those vessels which should advance to certain points in the Arctic seas; the British government having the year before fitted out two expeditions to the north pole. Captain Buchan, commanding the Trent and the Dorothy, was instructed to attempt a passage between Spitzbergen and Nova Zembla, over the pole into the Pacific, and captain Ross, commanding the Isabella and the Alexander, to attempt the north-western passage from Davis's straits and Baffin's bay into the Frozen ocean, and thence into the Pacific. Captain Buchan, however, reached only 80° 32′, north of Spitzbergen, where he remained three weeks frozen in; while the chief geographical result of captain Ross's expedition was the more accurate determination of the situation of Baffin's bay; for although he sailed up Lancaster sound, he did not continue his progress far enough to discover that it was open. The British government, therefore, in 1819, sent out lieutenant Parry, who had accompanied captain Ross, on a second voyage into Baffin's bay. He penetrated with his vessels, the Hecla and Griper, through Lancaster sound into Barrow's strait, in which he examined Prince Regent's inlet running in a southern direction, and the polar sea, and wintered in the harbour of an uninhabited island, which he called *Melville island* (74° 45′ lat.) As he had passed (Sept 10) 110° W. long. of Greenwich, he was entitled to the first prize offered by parliament. With eleven companions he explored Melville island, and reached (June 6) the northern coast (75° 34′ 47″ lat. and 110° 36′ 52″ long). They found no inhabitants, but there were some remains of Esquimaux huts, a musk-ox, and rein-deer. August 1, Parry left the winter harbour, where he had remained ten months; but was obliged, after having reached 113° 46′ 43″ long. and 74° 27′ 50″ lat., to return, in consequence of the immense fields of ice, through Davis's straits to Britain, and both vessels entered the harbour of Leith, Oct. 29, 1820. This expedition appeared to give some hope of final success; and on May 8, 1821, captain Parry again sailed, having under his command the Hecla, and accompanied by captain Lyon in the Fury. This expedition, the narrative of which is interesting, did not, however, much advance the object of their voyage. ——While Parry and Ross were seeking for a north-west passage into the Polar sea, captain Franklin was sent by the British government to penetrate to the northern coast of America by land, along Hudson's bay and Coppermine river. Accompanied by Canadians as interpreters, he continued his route through unexplored deserts, but without any satisfactory result; being compelled, through want of provisions, to return to the factory of York, on Hudson's bay, after having travelled altogether 5,550 English miles.—In May, 1824, government fitted out a third polar expedition for the discovery of a north-west passage through Prince Regent's inlet, under Parry and Lyon. The former, with the Hecla and Fury, arrived, July 13, 1824, at Whale island, in Baffin's bay, and proceeded through Barrow's straits, till they arrived, Sept. 27, at Port Bowen, in Prince Regent's bay, where the ships wintered. Storms and icebergs drove the ships ashore, and it became necessary to abandon the shattered Fury.—In 1825, captain Franklin undertook a new journey overland, with the intention of sailing westerly from Mackenzie's river along the coast to Beering's straits, while Dr. Richardson should examine the country, with a view to complete its natural history from the mouth of that river to the Coppermine river. At the same time captain Beechey sailed in the Blossom by the way of Cape Horn, to discover an easterly passage round the Icy cape, or in Kotzebue sound. In six months Franklin reached the northern ocean, near Garry's island (69° 30′ lat.), and returned upon the Mackenzie to his winter quarters at Fort Franklin, on Great Bear lake. Both parties left their winter quarters June 21, 1826, and shortly after separated in 67° 38′ lat. and 133° 52′ W. long. Franklin followed down the western arm of the Mackenzie, which runs along the foot of the Rocky mountains. He had thus examined the coast of the Polar sea—a barren wall of rocks, from 113° to 149° 38′ longitude. Floating ice and fogs compelled him to return; but he was fully convinced that a north-west passage was open. The other division, under Richardson and Kendall, explored the coast from the eastern branch of the Mac-

IT IS SAID THAT FERREB, OF MALDONADO, IN 1598, PASSED THROUGH A STRAIT BETWEEN ASIA AND AMERICA INTO THE SOUTH SEA.

IN 1631 AN EXPEDITION FOR EFFECTING A NORTH-WEST PASSAGE WAS UNDERTAKEN BY JAMES AND FOX, AND ANOTHER BY WOOD IN 1676.

kenzie to the Coppermine river, whose mouth they reached August 8, and returned, after seventy-one days' absence, to fort Franklin, upon the Great Bear lake. Meantime, captain Beechey, in the Blossom, had sailed north from Kotzebue's sound, and had penetrated over 120 miles beyond Icy cape. Here he waited in vain for captain Franklin's arrival in 154 W. long., and in a latitude where the length of a degree is only about twenty miles; but he was obliged to return Oct. 14.——The admiralty now sent captain Parry, in the Hecla, to reach the north pole. He took rein-deer and ice-boats on board at Hammerfast, in Lapland; reached Spitzbergen May 27, 1827; left the Hecla there in the ice; sailed June 21, with two boats, through an open sea; left the boats on the 24th, and began (81° 12′ 51″) his journey over the ice to the north pole. But after thirty-five days' journey over the ice, during which it rained almost all the time, he reached only the latitude of 82° 45′ 15″; and the ice being every where broken, he was obliged to return, after having travelled over 292 miles in a right line, and nearly double that distance if we reckon the necessary windings. The dip of the magnetic needle had constantly been towards the north, and the western variation diminished. It is singular that both captain Parry and captain Franklin arrived in London on the same day, Sept. 29, 1827.—— In the spring of 1829, captain Ross, chiefly through the liberal assistance of Felix Booth, Esq., sheriff of London, undertook a private expedition into the Polar seas, with a view to determine the practicability of a new passage which had been confidently said to exist, particularly by Prince Regent's inlet. This voyage was perilous in the extreme; and no authentic intelligence was received of the expedition, from the 27th of July, 1829, the day it sailed from Wideford, in Greenland, where it had put in to refit, till August, 1833, when the commander and crew were discovered on the south shore of Lancaster sound, by captain Humphreys, of the Isabella, of Hull, the very ship which captain Ross had formerly commanded, and they arrived at Hull on the 18th of October, 1833, after an absence of upwards of four years. Our space will not permit us to narrate many of the events of this perilous and long protracted voyage. Having experienced several almost miraculous escapes from shipwreck, they ultimately succeeded in reaching the 70th degree of latitude, in a direction nearly due south of Fury point, where their course was arrested by an impenetrable barrier of ice. In a harbour which they found at this extreme point they wintered; and in January, 1830, they opened a friendly communication with a tribe of natives, who had never before held intercourse with strangers. Commander Ross (nephew of captain Ross), who was sent to survey the coast of the West sea, leading to cape Turnagain, succeeded in getting within 150 miles of 't, and left off within a short distance of where captain Back expected Fish River to join the sea. They also determined that the land was continuous to that which forms Repulse bay. The next winter was one of unparalleled severity—the lowest temperature being 92° below the freezing point. The following summer proving no less rigorous for the season, they were able to retrace their course only fourteen miles; and again, during the winter of 1831, they were doomed to further privations and sufferings. Their provisions being consumed they had now no alternative but to abandon the vessel, and to proceed to the spot where the Fury's provisions still remained—a direct distance of 200 miles, which was increased by one-half, in consequence of the circuitous route which the ice obliged them to take. They accordingly left the Victory in May, 1832, and after a journey of almost unprecedented labour and hardship, they reached Fury beach in July. They then repaired the Fury's boats, and attempted to escape; but it was September before they reached Leopold's island, which they have fully established to be the north-east point of America. Winter set in, and they had no choice but to retrace their steps, and spend another inclement season in their canvas huts covered with snow. Their sufferings at this time, aggravated by want of beds, clothing, and animal food, were of the most acute description: but the spring and summer of 1833 presented more cheering prospects; and they were enabled to return nearly to Lancaster sound, where they were rescued by captain Humphreys, as before stated. Though this expedition, like all the former ones, failed in its principal object, the true position of the magnetic pole was ascertained; the country to which captain Ross gave the name of Boothia, in honour of his patron, was discovered; and much valuable information was obtained for the improvement of geographical and philosophical knowledge. Before news of captain Ross's safety reached this country, subscriptions were raised for fitting out an expedition to go in search of the commander and his gallant crew; and captain Back was appointed to conduct it. He sailed in the spring of 1833; but information of Ross's return reached him in time to prevent him from encountering any inconvenience in his proposed search. He, however, visited the great Fish river, and examined its course to the Polar seas; and, after a perilous arctic land journey, he arrived at Liverpool on the 8th of September, 1835.——Having, in as brief compass as we well could, given a faint outline of the principal attempts which have been made within our memory to discover the "north-west passage," we have the gratification of concluding the article with *an account of its actual accomplishment*. This we offer, without abridgment, as we find it in the columns of the *Literary Gazette*, extracted, as the Editor states, from the *John Bull*:—

"Discovery of the North-West Passage.—The great geographical problem of the last three centuries has at length been solved, and we are proud to say by Englishmen; and still more proud, perhaps, that it

MIDDLETON'S VOYAGE OCCURRED IN 1741; SMITH AND MOORE'S, 1746; CHRISTOPHER'S, 1761; LORD MULGRAVE'S, 1763.

WAS FITTED OUT BY THE HUDSON'S BAY COMPANY IN 1737.

has been the result of the ardour and enterprise of a private company, than even if it had been the honourable fruit of a government expedition. The sentiment may be badly expressed, but we are sure that the feeling is right. The triumph of individual energy, in instances like the present, illustrates the national character more fully—'tis the growth of the soil. Our readers will have anticipated that news must have arrived at the Hudson's Bay House from the enterprising and intelligent officers of the company, Messrs. Dease and Simpson, whose Arctic discoveries in 1837 and 1838 have already added so materially to our geographical knowledge. A despatch from those gentlemen was published in a second edition of yesterday's 'Times;' and it is to this source that we are indebted for the following particulars. Messrs. Dease and Simpson descended the Coppermine river on the 22d of June, last year, on their third and happily most successful expedition. On the 18th of the following month they reached Cape Barrow, and had the satisfaction of finding Coronation Gulf partially open; 'whereas,' says the despatch, 'long after the same date, in 1838, the whole party might have crossed it on foot.' They then doubled Cape Alexander amidst very heavy driving ice. 'From Cape Alexander, situate in lat. 68° 56′ N., long. 106° 40′ W., to another remarkable point in lat. 68° 33′ N., long. 98° 10′ W., the Arctic coast may be comprised in one spacious bay, stretching as far south as lat. 67° 40′, before it turns off abruptly northward to the last-mentioned position. This vast sweep, of which but an inconsiderable portion was seen by Mr. Simpson last year, is indented by an endless succession of minor bays, separated from one another by long narrow projecting points of land enclosing an incalculable number of islands. To reach the last-named point they had to thread a very intricate navigation; but on making it, they suddenly 'opened a strait running in to the southward of east, where the rapid rush of the tide scarcely left a doubt of the existence of an open sea leading to the mouth of Back's Great Fish River. This strait is ten miles wide at either extremity, but contracts to three in the centre. Even that narrow channel is much encroached upon by high shingle islands, but there is deep water in the middle throughout.' Soon after this, that is, on the 12th of August, they were visited by the most terrific thunder storm which they had ever witnessed in these regions: and, on the 16th, the adventurous party 'breakfasted on the identical spot where the tent of our gallant, though less successful precursor (Sir George Back) stood, on his return from Point Ogle to the Great Fish River, that very day five years before.' Here we cannot do better than quote again from the despatch, which proceeds to state:—'The arduous duty we had, in 1836, undertaken to perform, was thus fully accomplished; and the length and difficulty of the route back to the Coppermine would have amply justified our immediate return. We had all suffered more or less from the want of fuel, and the deprivation of warm food, and the prospects grew more cheerless as the cold foul weather stole on apace; *but having already ascertained the separation of Boothia from the American Continent, on the western side of the Great Fish River, we determined not to desist till we had settled its relation thereto on the eastern side also.* A fog which had come on dispersed towards evening, and unfolded a full view of the picturesque shores of the estuary. Far to the southward Victoria headland stood forth, so clearly defined that we instantly recognised it by Sir George Back's exquisite drawing. Cape Beaufort we almost seemed to touch, and with the telescope we were able to discern a continuous line of high land as far round as north-east, about two points more northerly than Cape Hay, the extreme eastern point seen by Sir George Back.' Directing their course to a bold promontory, the farthest land in sight, they there landed, erected a conical pile of ponderous stones, fourteen feet high, placing under it a sealed bottle, containing a sketch of their proceedings, and, amidst a salvo of shot and enthusiastic cheering, took possession of their discoveries 'in the name of Victoria the First.' This bold promontory they named Cape Britannia, and its position is N. lat. 68° 56′ 3″, W. long. 94° 35; the coast trended away from this north-east, and they ran along it forty-three miles further, to the mouth of a small river, the position of which they determined to be N. lat. 68° 28′ 27″ W. long. 97° 3′; this was the term of their voyage. 'From a limestone ridge, about a league inland from the mouth of this river,' says the despatch, 'we obtained a view of some very remote blue land in the north-east quarter, in all probability one of the southern promontories of Boothia. Two considerable islands lay far in the offing, and others high and distant, stretched from E. to E.N.E. Our view of the low main shore was confined to five miles in an easterly direction, after which it appeared to turn off greatly to the right. We could, therefore, scarcely doubt our having arrived at that large gulf uniformly described by the Esquimaux as containing many islands, and with numerous indentations stretching down to the southward till it approaches within forty miles of Repulse and Wager bays. The exploration of such a gulf, which was the main object of the Terror's ill-starred voyage, would necessarily demand the whole time and energies of another expedition, having a starting or retreating point much nearer to the scene of operations than Great Bear Lake; and it was quite evident to us that any further foolhardy perseverance could only lead to the loss of the great object already attained, together with that of the whole party.' The voyagers therefore wisely determined to return; and they began to retrace their steps on the same day, the 20th of August. Our space will not allow us to accompany them in their voyage homeward, during

which we regret to find the party suffered extremely from the excessive cold. Their course home took them through the Great Bear Lake, and down the Mackenzie, and they finally reached Fort Simpson on the 14th of October, having been nearly four months engaged in an expedition, the difficulties, perils, and sufferings of which, nothing but an Arctic voyage we presume can give the imagination any idea of. Although hard pressed for space, we must quote the concluding passage of the despatch, as it shows the indomitable spirit of the men: 'We rejoice in having anticipated the Russian expedition, and secured to our country and the company the indisputable honour of discovering the north-west passage, which has been an object of search to all maritime nations for three centuries. When our expedition was planned at Norway House, in 1836, it was confidently expected that Sir George Back would have achieved the survey of the Gulf of Boothia with the Vernon boats, and that our meeting at the mouth of the Great Fish River would have left no blank in the geography of Northern America. That officer's failure, the exhaustion of our men and means, and the necessity of a new wintering ground, render a fresh expedition indispensable for the examination of the gulf of Boothia, the circuit of which to the Strait of the Fury and Hecla, according to the Esquimaux accounts, cannot be less than 400 or 500 miles, it only remains for us to recommend to your approbation the plan proposed by Mr. Simpson to perfect this interesting service, which, as he had no wish to avail himself of the leave of absence granted, he is prepared to follow up whenever the limited means required are placed at his disposal.'

NOTES, in music, characters which mark pitch and the time of a sound, and the swiftness and slowness of its motions. In general, under *notes* are comprehended all the signs or characters used in music, though in propriety the word only implies the marks which denote the degrees of gravity and acuteness to be given to each sound. [See MUSIC.]

NOUN, in grammar, a word that denotes any object of which we speak, whether that object be animate, inanimate, or ideal; as *man, gate, mind.* Nouns form the basis of all language: thus, we call a certain instrument, a *saw;* the act of using that instrument, *sawing;* and thence obtain the verb, to *saw.*

NOVAC'ULITE, in mineralogy, the *hone,* or *Turkey-oil-stone,* a variety of argillaceous slate. It owes its power of whetting or sharpening steel instruments to the fine siliceous particles it contains. Various other stones are used as whetstones, such as mica slate, freestone, &c.

NOV'EL, in literature, a fictitious tale, or imaginary history of real life, generally intended to exhibit the operation of the passions, foremost among which is love. "In the novel," says Goethe, "sentiments and events are to be chiefly represented; in the drama, character and actions. The hero of the novel must be passive, or, at least, not in a high degree active; but we expect of the dramatic hero action." Historical novels, excellent as many of them undoubtedly are, blend facts so incongruously with fiction, that they create erroneous ideas in the minds of those readers who shrink from toilsome research; and though they may convey a tolerably faithful picture of past manners, the high-wrought incidents with which they are filled make a sad jumble when associated with the matter-of-fact events described by the sober historian.——*Novel,* in civil law, a term used for the constitutions of several emperors, as those of Justin, Tiberius, Leo, and more particularly of those of Justinian. The constitutions of Justinian were called novels, either from their producing a great alteration in the face of the ancient law, or because they were made on new cases, and, after the revisal of the ancient code, compiled by order of that emperor.

NOVEM'BER, the eleventh month of the Julian year, consisting only of thirty days. It is the first winter month in the northern hemisphere, and the first summer month of the southern. Its name, November, originates in its being the ninth month of the Roman reckoning.

NOV'ICE, a person not yet skilled or experienced in an art or profession. *Novice* is more particularly used in monasteries for a religious person, in his or her novitiate, or year of probation, and who has not made the vows.

NOVI'TIATE, the term appointed for the trial of those who are to enter a monastery, in order to ascertain whether they have the qualifications necessary for living up to the rule to which they are to bind themselves by vow. The novitiate is generally very severe; the novice generally having to perform many menial offices about the convent, and to give account of the most trifling actions to the master of the novices.

NU'CLEUS, properly, the kernel of a nut, or of any seed inclosed within a husk. In astronomy, the term *nucleus* is used for the body of a comet, otherwise called its head.——In ancient architecture, *nucleus* signified the middle flooring, which consisted of a strong cement, over which they laid the pavement.

NUDE COM'PACT *(nudum pactum),* in law, a contract made without any consideration, and therefore not valid.——*Nude matter,* a bare allegation of something done.

NUDIPEDA'LIA, in antiquity, a festival in which all were obliged to walk barefooted. This was done on account of some public calamity; as the plague, a famine, &c. &c. It was likewise usual for the Roman matrons, when any supplication and vows were to be made to the goddess Vesta, to walk in procession to her temple barefooted.

NU'DITIES, in painting and sculpture, those parts of the human figure which are not covered with drapery. The appearance

of the covering being determined by the structure of the frame, it is essential to the painter, as well as the sculptor, to study the naked figure with the greatest attention.

NUM'BER, in arithmetic, an assemblage of several units or of several things of the same kind. *Cardinal* numbers express the number of things, as 1, 2, 3, 4. *Ordinal* numbers denote the order of things, as 1st, 2d, 3d, &c. *Even* numbers are those which may be divided into two equal parts, without a fraction, as 6, 12, &c. *Uneven* numbers are such as leave a remainder after being divided, as 5, 13, &c. A *square* number is the product of any number multiplied by itself, as 4, the product of 2 multiplied by 2. A *rational* number, is one commensurable with unity. A number incommensurable with unity is termed *irrational* or *surd*. A *cubic* number is the product of a square number by its root: such is 27, as being the product of the square number 9, by its root 3. A *perfect* number is that whose aliquot parts added together make the whole number, as 6, 28; the aliquot parts of six being 3, 2, and 1=6; and those of 28, being 14, 7, 4, 2, 1=28. *Imperfect* numbers, those whose aliquot parts added together, make either more or less than the whole. *Homogeneal* numbers, are those referred to the same units; those referred to different units are termed *heterogeneal*.

NUM'BERS, the title of the fourth book of the Pentateuch, so called because it contains an account of the numbering of the people. The book comprehends a period of the Israelitish history of about thirty-eight years.——*Numbers*, in poetry, oratory, music, &c. are certain measures, or cadences, which render a verse, period, or song, agreeable to the ear. *Poetical numbers* consist in a certain harmony in the order and quantity of syllables constituting feet. *Rhetorical numbers* are a sort of simple unaffected harmony, less apparent than that of verse, but such as is perceived and affects the mind with pleasure.

NU'MERAL LETTERS, the Roman capital letters which stand as substitutes for figures; as I for 1; X for 10; L for 50; C for 100, &c.

NUMERA'TION, the art of expressing in figures any number proposed in words, or expressing in words any number proposed in figures. Thus for one thousand, we write 1000, &c.

NU'MERATOR, in arithmetic, the number in the upper line of a fraction, denoting the number of the given parts taken, as 3 in ¾, that is three out of the four parts of an integer.

NUMISMA'TICS, or NUMISMATOL'OGY, the name of the science which has for its object the study of coins and medals of all nations, as means of history and rectification of dates in chronology. The earliest coins are Phœnician, and were struck or imprinted from dies unreversed, so that the inscription was reversed; but those struck by the ancient Greeks and Romans are most deserving our attention. The study of coins and medals is indispensable to archæology, and to a thorough acquaintance with the fine arts. They indicate the names of provinces and cities, determine their position, and present pictures of many celebrated places. They fix the period of events, sometimes determine their character, and enable us to trace the series of kings; they also give us the attributes and titles of different divinities, the utensils and ceremonies of their worship, and the costume of the priests—in fine, every thing which relates to usages, civil, military, and religious—while they enable us to trace the epochs of different styles of art, and are of great assistance in our philological researches. [See MEDALS.]

NUM'MULITE, the fossil remains of a chambered shell of a flattened form, formerly mistaken for money.

NUN'CIO, a person sent by the pope on foreign missions which concern ecclesiastical affairs.

NUN'CUPATIVE WILL, in law, a will or testamentary desire expressed verbally, but not put into writing. It depends merely on oral testimony for proof, though afterwards reduced to writing. Nuncupative, in a general sense, signifies something that exists only in name.

NUN'DINÆ, in antiquity, days set apart by the Romans for the country people to expose their wares and commodities to sale, very similar to our large markets or fairs. They were called *Nundinæ*, because they were kept every ninth day.

NUN'NERY, in the Romish church, a religious house for nuns, or females who have bound themselves by vow to a single life.

NUR'SERY, in gardening, is a piece of land set apart for raising and propagating all sorts of trees and plants, to supply the garden and other plantations.

NUT'MEG, the kernel of a fruit belonging to a species of *Myristica*, growing in the isles of the East Indies and the South Sea. The fruit is of the kind called a *drupe*, that is, a pulpy pericarp without valves, containing a nut or kernel. It is generally separated from its outward coat, the mace, before it is shipped, but the whole fruit is occasionally imported in a preserved state, as a sweetmeat.

NUTA'TION, in astronomy, a tremulous motion of the earth's axis, by which in its annual revolution it is twice inclined to the ecliptic, and as often returns to its former position.

NUT'GALLS, excrescences on the leaf of the oak. The Aleppo galls are imported for the use of dyers, calico printers, &c.

NUTRI'TION, in the animal economy, is the identification and assimilation of nutritive matter to our organs, or the repairing the continual loss which the different parts of the body undergo. The motion of the parts of the body, the friction of these parts with each other, and especially the action of the air, would destroy the body entirely, if the loss was not repaired by a proper diet, containing nutritive juices;

NUX VOMICA IS A VERY VIRULENT POISON; ITS INTRODUCTION INTO BREWERIES IS THEREFORE PROHIBITED UNDER HEAVY PENALTIES.

which being digested into the stomach, and afterwards converted into chyle, mix with the blood, and are distributed through the whole body for its nutrition. In proportion as our parts are destroyed, they are renewed by homogeneous particles, or such as are exactly similar to themselves; otherwise their nature, which is always alike, would suffer continual changes. When the nutritive matter has been animalized, or assimilated to the body which it is designed to nourish, by the organs of digestion, absorption, circulation, respiration, and secretion, the parts which it supplies retain and incorporate it with their own substance. This nutritive identification is variously effected in different parts, as the brain, muscles, bones, &c.; each of these appropriates to itself, by a true secretion, that which is found analogous to its nature, and rejects the heterogeneous particles. A bone is a secretory organ that becomes encrusted with phosphate of lime; the lymphatic vessels, which in the work of nutrition perform the office of excretory ducts, remove this salt after it has remained a certain time in the areolæ of its texture. It is the same in muscles with respect to the fibrin; and in the brain with albumen: each part imbibes, and renders solid in its structure, such juices as are of the same nature, in consequence of a power, of which the affinity of aggregation of the chemists gives us an idea, and perhaps furnishes us with an exact model. Every living body, without exception, seems to possess a faculty of forming and decomposing substances, by the assistance of which it is supported, and of giving rise to new products. Thus the animal machine is continually destroyed, and at distant periods of life does not, perhaps, contain a single particle of the same constituent parts.

NUX VOM'ICA, in botany, an East Indian tree, and its fruit, which is globular, about the size of an orange, and contains several seeds. These seeds are a certain poison for cats, dogs, &c., and is confidently said to be one of the ingredients unlawfully infused into beer, to give it a stupifying quality.

NYCHTHEM'ERON, among the ancients, signified the whole natural day, or day and night, consisting of twenty-four hours, or equal parts. This way of considering the day was particularly adopted by the Jews, and seems to owe its origin to that expression of Moses, in the first chapter of Genesis, "the evening and the morning were the first day."

NYCTALO'PIA, in medicine, a defect of vision, by which, through weakness, the patient can discern objects only in obscure places, or by the dull light of evening. This is a constitutional defect, not to be cured. Anatomists attribute it to the want of a constituent part of the animal substance, called the *rete mucosum*, which gives colour to the complexion, hair, and eyes.

NYL'GHAU, in zoology, an animal brought from the East Indies, bearing considerable resemblance to both the bovine and deer species. Its body, horns, and tail are not unlike those of a bull; and the head, neck, and legs are very like those of a deer. The colour in general is ash or gray. Its horns are about seven inches long, and of a triangular shape. It eats oats, is fond of grass, hay, and wheat bread. The female is much smaller than the male, more resembles the deer, and has no horns.

NYMPH'A, or NYMPH, in entomology, the second state of an insect passing to its perfect form; another name for the *pupa*, *chrysalis*, or *aurelia*.

NYMPHÆ'A, certain public baths at Rome, of which there were twelve in number, adorned with curious statues of the Nymphs, to whom they were consecrated, furnished with pleasant grottoes, and supplied with cooling fountains, which rendered them exceedingly delightful, and drew great numbers to frequent them. Silence was particularly required there, as appears by this inscription, *Nymphis loci, bibe, lava, tace.*

NYMPHÆ'A, in botany, the Water Lily, a genus of plants in the Linnæan system, class 13 *Polyandria*, order 1 *Monogynia*. The species are perennials.

NYMPHÆ'A LO'TUS, in botany, the Egyptian lotus; an aquatic plant, a native of both Indies. The root is conical, firm, about the size of a middling pear, covered with a blackish bark, and set round with fibres. It has a sweetish taste, and, when boiled or roasted, becomes as yellow within as the yolk of an egg. The plant grows in abundance on the banks of the Nile, and is there much sought after by the poor, who in a short time collect enough to supply their families with food for several days.

NYMPHS, local goddesses, as Nereids in the sea; Naiads of the fountains; Dryads of the woods, &c. &c.

NYSTAG'MUS, in medicine, a twinkling of the eyes, such as happens when a person is very sleepy. It is known by the instability or involuntary and constant motions of the globe of the eye, from one canthus to another, or in some other directions. Sometimes it is accompanied with a hippus, or an alternate and repeated dilatation and constriction of the pupil; and, as there are several species of nystagmus, it is evident it arises from various causes.

THE NYMPHS HELD A MIDDLE STATION BETWEEN GODS AND MORTALS; AND, THOUGH NOT IMMORTAL, WERE REMARKABLE FOR LONGEVITY.

A STANDING TREE IS MEASURED BY SQUARING ONE-FOURTH OF THE GIRTH, AND MULTIPLYING IT BY THE HEIGHT OF THE TRUNK.

OAK TIMBER SHOULD BE FELLED EARLY IN THE WINTER, FOR IF THE SAP IS ASCENDING, THE TIMBER WILL BE LESS DURABLE.

O.

O, the fourth vowel and the fifteenth letter in the alphabet, is pronounced by projecting the lips, and forming an opening resembling the letter itself. The English language designates not less than four sounds by the character *o*, exemplified in the words *no, prove, for, not*. The French indicate the sound *o* (pronounced as in *no*) by various signs. The use of *o* is next in frequency to that of *a:* it is used particularly to express admiration, warning, pity, imploring; and, in general, as introductory to language expressive of great emotion, as *O!* or *Oh!* With an apostrophe after it, *O* signifies *son* in Irish proper names; as O'Neil (the *son of Neil*), like the prefix *Mac*.

OAK *(quercus)* in botany, a tree ranking among the most useful of the productions of temperate climates. More than eighty species are known; but the common European oak *(quercus robur)* is a tree of the first consequence on account of the qualities of its wood. It attains the height of from 60 to 100 feet, with a trunk from 6 to 12, or more, in circumference. From the solidity and durability of the wood, it is employed for a vast variety of purposes, and, above all, for ship-building. The British oak surpasses all other kinds; and to it this country is indebted for its boasted "wooden walls." Before the introduction of mahogany, it was very generally used for furniture; and it is also the best wood for fuel. Evelyn mentions an oak cut down in Donnington Park, near Newbury, once the residence of Chaucer, which ran fifty feet clear without a knot, and cut clean timber five feet square at the base. The "lady oak," mentioned by Sir E. Harley, produced a butt of forty feet, and squared five feet throughout its whole length, thus producing twenty tons of timber. In 1810 an oak tree, which grew about four miles from Newport in Monmouthshire, was felled for the use of the royal navy, which contained 2416 cubic feet of sound and convertible timber. The main trunk was nine feet and a half in diameter. The tree was purchased, standing, for 405*l.*, and when brought to market, it produced nearly 600*l.* But the most magnificent oak ever known to grow in England, was probably that dug out of Hatfield bog: it was 120 feet in length, twelve in diameter at the base, ten in the middle, and six at the smaller end where broken off; so that the butt for sixty feet squared seven feet of timber, and four its entire length. In the New Forest, Evelyn counted, in the sections of some trees, three hundred or four hundred concentric rings of wood, each of which recorded a year's growth. Gilpin, in his charming "Forest Scenery," notices "a few venerable oaks in the New Forest, that chronicle upon their furrowed trunks, ages before the Conquest." The growth of the common oak in general is extremely slow. The *acorn* is the fruit of this tree, and, though now used as the food of swine, in ancient times it formed an important article of nutriment to some of the northern nations, and, among others, to the rude inhabitants of the British isles. The oak is raised from acorns, sown either where the tree is to stand, or in a nursery whence the young trees are transplanted. A fine grown oak conveys to the mind associations of strength and duration, which are very impressive; nay, Vitruvius has said, that when driven into the earth it is of eternal duration. It should, however, be observed, that there are two distinct species of oak in England—the *Quercus robur* and the *Quercus sessiflora;* the former of which affords a close-grained, firm, solid timber, rarely subject to rot; the other more loose and sappy, very liable to rot, and not half so durable. This difference was noticed so early as the time of Ray; and Martyn in his "Flora Rustica," and Sir James Smith in his "Flora Britannica," have added their testimonies to the fact. To the introduction of this second species of oak in our naval dock-yards, is to be attributed the prevalence of the dry rot, which of late years has been so destructive to the British navy.——*Oak-bark* is used in tanning. In medicine, the bark is a strong astringent, and is therefore recommended in hæmorrhages. Some have supposed that it would answer every purpose of Peruvian bark; but this idea others, after trial, have discountenanced. Both the bark and the leaves are employed in hot-beds; and the leaves are now reckoned better for this use than the bark.

OAK'-GALLS, protuberances on the leaves of the oak, formed and inhabited by insects. They appear in April, and remain till June or longer. When opened, they are found to contain one insect only. "It might appear that the parent fly, when she had formed a gall for the habitation of her worm offspring, had placed it in an impregnable fortress; but this is not the case; for it frequently happens that a fly which produces a worm of the carnivorous kind, pierces the sides of the gall and deposits her egg within it. The worm, when hatched, feeds upon the proper inhabitant; and finally, after devouring it, passes, itself, into the chrysalis state, and thence appears in the form of its parent-fly, and is seen making its way out of the gall."

OAK'UM, old ropes untwisted, and pulled out into loose hemp; used in caulking the seams, tree-nails, and bends of a ship, for stopping or preventing leaks. That formed from untarred ropes is called white oakum.

OAR, a long piece of timber, flat at one

end and round at the other, used to propel a boat or barge on the water. The flat part is called the *blade*, and the round end the *handle*. To push the boat or vessel forwards by means of this instrument, the rowers turn their backs forwards, and dipping the blade of the oar in the water, pull the handle forward, which, striking the water, necessarily impels the vessel according to the force and skill with which the action is performed.

OA'SIS, a fertile spot, situated in the midst of the uninhabitable deserts of northern Africa: the name is also applied to a cluster of verdant spots. In the desert of Sahara there are several of these, which serve as halting-places for the caravans. There are also some considerable towns so named, which are described in the travels of Belzoni, Edmondstone, Browne, and others.

OAT, in botany, a plant of the genus *Avena*. From the back of the corolla, there grows a single, crooked, and contorted arista, or awn: the corolla serves as a pericarp, surrounding a single seed, which is of an oblong figure, very sharp-pointed at each end, and with a longitudinal furrow. When the seed or grain only is intended to be spoken of, the word is commonly used in the plural, *oats*. The meal of this grain, *oatmeal*, forms a considerable article of food for man in some countries; and in all parts oats are excellent food for horses and cattle. It is the hardiest of all the cereal grasses growing luxuriantly in cold northern climates, and in coarse mountainous districts, where neither wheat nor barley can be advantageously cultivated. In Scotland, where it has long formed a principal part of the food of the people, and in Ireland, great quantities are grown.—The original country of the oat, that is, the place in which it grows without cultivation, is fixed by Mr. Bruce, in Aroossi, a small territory near the source of the Nile: "Wild oats," says this traveller, "grow up here, spontaneously, to a prodigious height and size, capable often of concealing both the horse and his rider, and some of the stalks being little less than an inch in circumference. They have, when ripe, the appearance of small canes. The inhabitants make no sort of use of this grain in any period of its growth. The uppermost thin husk of it is beautifully variegated with a coangeable purple colour: the taste is perfectly good." ——*Transformation of oats into rye.* It is asserted that this transformation will take place if the oats be sown very late (about Midsummer-day), and cut *twice* as green fodder before shooting into flower-stalks; whereupon a considerable number of the oat plants do not die in the course of the winter, but are changed in the following spring into rye, forming stalks which cannot be known from those of the finest winter rye.

OATH, is a solemn affirmation made in the presence of a magistrate or other person rendered competent by the law to administer it, in which the person sworn invokes the Almighty to witness that his testimony is true. A person who is to be a witness in a cause may have two oaths administered to him; the one to speak the truth, in relation to what the court shall think fit to ask him, concerning himself or any thing else that is not evidence in the cause; and the other purely to give evidence in the cause wherein he is produced as a witness; the former of which is called an oath upon a *voyer dire*. By statute, all who hold offices of any kind under the government, members of the house of commons, ecclesiastical persons, members of colleges, school-masters, serjeants-at-law, counsellors, attorneys, advocates, proctors, &c., are required to take the oaths of allegiance, &c. The laws of all civilised states have required the security of an oath for evidence given in a court of justice; and the Christian religion, while it utterly prohibits profane and needless swearing, does not seem to forbid oaths duly required, or taken on necessary occasions. But the Quakers and Moravians,—swayed by the sense which they put upon that text of Scripture in St. Matthew which says, "Swear not at all," and St. James's words, ch. v. 12., — refuse to swear upon any occasion, even at the requisition of a magistrate, and in a court of justice. These scruples appear to proceed from not distinguishing between the proper use and the abuse of swearing. It is doubtless impious to call upon God to witness trifles, or to use his holy name as a mere expletive in conversation; but it does not follow that we may not call upon him to witness truths of importance. If it be lawful to ask of God our daily bread, and other earthly blessings, it cannot surely be unlawful, where the lives or properties of our neighbours, or the security of government is concerned, to invoke him with reverence to witness the truth of our assertions, or the sincerity of our intentions; because of our truth and sincerity, in doubtful cases, none but he can be the witness. —— Oaths to perform illegal acts do not bind, nor do they excuse the performance of the act. Perjury is the wilful violation of an oath administered by a lawful authority to a witness in a judicial proceeding.—Different formalities have been customary in different countries in taking oaths. The Jews sometimes swore with their hands lifted up, and sometimes placed under the thigh of the person to whom they swore. This was also the custom among the Athenians and the Romans. The ancients guarded against perjury very religiously; and for fear they might fall into it through neglect of due form, they usually declared that they bound themselves only so far as the oath was practicable; and lest the obligation should lie upon their ghosts, they made an express obligation, when they swore, that the oath should be cancelled at their death. Perjury they believed could not pass unpunished, and expected the divine vengeance to overtake the perjured villain even in this life.

OBADI'AH, or *the prophecy of Obadiah*

a canonical book of the Old Testament, which is contained in one single chapter, and is partly an invective against the cruelty of the Edomites, and partly a prediction of the deliverance of Israel, and of the victory and triumph of the whole church over her enemies.

OBCOR'DATE, in botany, shaped like a heart, with the apex downward; as, an *obcordate* petal or legume.

O'BEAH, a species of witchcraft practised among the Negroes, the apprehension of which operating upon their superstitious fears, is frequently attended with disease and death.

OB'ELISK, in architecture, a high quadrangular pillar, diminishing as it ascends, and terminating in a small pyramid. Obelisks are of Egyptian origin; and, according to Herodotus, they were first erected in honour of the sun. One of their uses was to find the meridian altitudes of the sun at different times of the year, serving instead of very large gnomons. Augustus erected an obelisk at Rome, in the Campus Martius, which marked the hours on a horizontal dial drawn on the pavement. Diodorus makes mention of two obelisks of Sesostris placed before a Theban temple, which were 120 cubits high. Herodotus mentions two others, 100 cubits high, one of which was erected before a temple at Sais, and the other before the temple of the sun at Heliopolis. In the plenitude of their power the Romans removed many of these relics, of times then ancient, from their original situations into Italy, and erected others. One of the obelisks now standing at Rome, viz. that of St. John of Lateran, is 140 feet in height, exclusive of the pedestal, and 179 feet with it.——In printing, an *obelisk*, thus †, is used as a reference to a note in the margin or at the foot of the page.

OB'JECT-GLASS, in optics, the glass of a telescope or microscope next the object, the purpose of which is to make a picture of the object, with the rays of light so diverging that the picture may be viewed by another glass, which fits them for distinct vision.

OBJECT'IVE CASE, in some grammars, is used for the accusative case. The objective or accusative case is that in which the noun is the object to which the action refers; as, "I reminded the master," in which *master* is used in the accusative or objective case.——*Objective line*, in perspective, the line of an object, the representation of which is sought for in the draught or picture.——*Objective plane*, any plane situated in the horizontal plane, the perspective representation of which is required.

O'BIT, a funeral solemnity, or office for the dead, most commonly performed when the corpse lies in the church uninterred It likewise signifies an annual commemoration of the dead, performed on the day of their death, with prayers, alms, &c. In religious houses they have a register, in which they enter the *obits* of their founders and benefactors, which was thence termed the *obituary*.

OBLA'TA, in law, things offered in the exchequer, or old debts brought from foregoing years, and put to the account of the present sheriff.

OBLA'TE, in geometry, an epithet for any figure that is flattened or shortened, as an *oblate spheroid*, having its axis shorter than its middle diameter, being formed by the rotation of an ellipse about the shorter axis. The earth is an oblate spheroid, the polar diameter being shorter than the equatorial diameter in the proportion of 331 to 332.

OBLA'TI, in church-history, secular persons who devoted themselves and their estates to some monastery, into which they were admitted as a kind of lay-brothers. The form of their admission was putting the bell-ropes of the church round their necks as a mark of servitude. They wore a religious habit, different from that of the monks.

OBLA'TION, a sacrifice, or offering made to God. In the canon-law, oblations are defined to be anything offered by godly Christians to God and the church, whether movables or immovables. Till the fourth century, the church had no fixed revenues, the clergy wholly subsisting on voluntary oblations.

OBLIGA'TION, in general, denotes any act whereby a person becomes bound to another to do something. Obligations are of three kinds, viz. natural, civil, and mixed. Natural obligations are entirely founded on natural equity; civil obligations, on civil authority alone, without any foundation in natural equity; and mixed obligations are those which being founded on natural equity, are further enforced by civil authority.——In a legal sense, *obligation* signifies a bond, wherein is contained a penalty, with a condition annexed for the payment of money, &c.

OBLIGA'TO (Italian, *required*), in music, a term used of those voices or instruments which are indispensable to the just performance of a piece.

OBLI'QUE, deviating from a perpendicular line or direction, as an oblique angle, &c. that which is not a right one.——*Oblique planes*, in dialling, are those which decline from the zenith, or incline towards the horizon.——*Oblique sailing*, is when a ship sails upon some rhomb between the four cardinal points, making an oblique angle with the meridian.——*Oblique ascension* and *descension*, in astronomy, those points of the equinoctial which rise and set with the sun, or any other point of the heavens in an oblique sphere.

OBLIQ'UITY, deviation from a right line; neither parallel nor perpendicular: generally applied to the ecliptic, which deviates from the plane of the earth's equator, 23°, 27'.

OB'OLUS, a small Grecian silver coin, equal to one penny farthing. It was this coin which they placed in the mouth of the dead, to pay Charon for their passage over the Styx.

OBO'VATE, in botany, a term for a leaf the narrow end of which is downward.

AN OBELISK, 66 FEET HIGH, WAS BROUGHT FROM LUXOR, A VILLAGE NEAR THEBES, IN EGYPT, AND SET UP IN THE PLACE LOUIS XV. IN PARIS, 1836.

THE FIRST OBELISK MENTIONED IN HISTORY WAS THAT OF RAMESES, KING OF EGYPT, IN THE TIME OF THE TROJAN WAR, 40 CUBITS HIGH.

THE OBSERVATORY BUILT IN EUROPE WAS AT CASSEL, IN 1561, UNDER THE SUPERINTENDANCE OF THE CELEBRATED TYCHO BRAHE.

OBSECRATIO, in Roman antiquity, a solemn ceremony performed by the chief magistrates of Rome, to avert any impending calamity. It consisted of prayers offered up to the gods whom they supposed to be enraged. So exact were they in observing the prescribed form on these occasions, that a person was appointed to read it over to the man who was to pronounce it, and the most trifling omission was held sufficient to vitiate the whole solemnity.

OBSECRATION, in rhetoric, a figure in which the orator implores the assistance of God or man.

OBSERV'ATORY, a building constructed in some lofty situation, and fitted up with telescopes, quadrants, &c. for the purpose of making astronomical observations. We find mention of observatories at a very early period: some of them existed in Chaldæa, ancient Persia, India, and China; and the most clebrated modern ones are those at Greenwich, Paris, Munich, and Palermo. Their accuracy is such, that astronomers and navigators are enabled to calculate to the 3600th part of a minute of time, and the 216,000th part of a degree; all such calculations depending on patient observation, and not on any theory or system The Greenwich observatory was built in 1676, by order of Charles II. at the instance of Sir Jonas Moore and Sir Christopher Wren; the former being surveyor-general of the ordnance: a circumstance from which the office of astronomer-royal has been placed under that department. The person to whom the province of observing was first committed, was Mr. John Flamsteed; a man who, as Dr. Halley expresses it, seemed born for the employment. In the year 1690, having provided himself with a mural arch, of seven feet diameter, well fixed in the plane of the meridian, he began to verify his catalogue of fixed stars, which hitherto had depended altogether on the distances measured with the sextant, after a new and very different manner, viz. by taking the meridional altitudes, and the moments of culmination, or, in other words, the right ascension and declination. In the space of upwards of forty years this astronomer collected an immense number of observations, which may be consulted in his Historia Cœlestis Britannica, published in 1725; the principal part of which is the Britannic catalogue of fixed stars. This observatory is situated on the highest eminence of Greenwich park, about 160 feet above low water mark. The observations made here are not only allowed to possess unrivalled accuracy, but have been the foundation of the most important work on practical astronomy ever published, viz. the Nautical Almanac, which Dr. Maskelyne commenced in 1767. There are many other observatories in the United Kingdom, both public and private. It is not our intention, however, to lengthen this article by enumerating them; though, perhaps, we ought to mention the one erected by Dr. Herschel, at Slough, where his far-famed forty-feet telescope (lately removed) for so many years attracted public attention.

OBSID'IAN, in mineralogy, a black, glassy-looking substance, with a large conchoidal fracture. It melts before the blowpipe into a white enamel.

OBSIDIONA'LIS, CORO'NA, a crown or garland made of grass, and given by the Romans to such generals as had delivered a Roman army or fortress besieged by the enemy.

OB'TURATORS, in anatomy, two muscles of the thigh, one of which is called *obturator internus*, and the other *obturator externus*. These muscles shut up the foramen or aperture between the os pubis and the hip-bone, and are rotators of the thigh.

OC'CIDENT, in astronomy, that part of the horizon where the sun descends into the lower hemisphere, in contradistinction to *orient*. Hence we use the word *occidental* for anything belonging to the west.

OCCIP'ITAL, in anatomy, a term applied to the parts of the *occiput*, or back part of the skull.

OC'CIPUT, in anatomy, *occipitis os*, *os memoriæ*, or *os nervorum*, the name given to that bone which forms the posterior and inferior part of the skull. It is of an irregular figure, convex on the outside, and concave internally. This bone is thicker and stronger than any other of the bones of the head, except the petrous parts of the ossa temporum. The reason for this seems to be that it covers the cerebellum, in which any wound is of the utmost consequence, and that it is, by its situation, more liable to be fractured by falls than any other bone of the cranium.

OCCULT', something secret, hidden, or invisible, as the occult quality of matter. ——The *occult sciences* are magic, necromancy, &c.——*Occult*, in geometry, is used for a line that is scarce perceptible, drawn with the point of the compasses, or a fine lead pencil.——*Occult disease*, is a term applied to such diseases the causes and treatment of which are not understood.——*Occult qualities*, those qualities in bodies which do not admit of any rational explanation.

OCCULTA'TION, in astronomy, the obscuration of any star or planet by the interposition of any other body, as the moon, &c. *Circle of occultation*, an imaginary circle round the poles, which contains those stars that are not visible in our hemisphere. The term *immersion* is given to the state of a star or planet, when it is so near the sun as to be invisible; also to that of the moon when she begins to be darkened by entering into the shadow of the earth.

OC'CUPANCY, in law, the taking possession of a thing not belonging to any person. *Occupancy*, says Blackstone, gave the original right to the property in the substance of the earth itself.

O'CEAN, the name given to the great mass of salt water which surrounds the land, covering nearly three quarters of the globe; and which is distinguished, for convenience of description, as if divided into

AN OBSERVATORY ON A MOST SPLENDID SCALE HAS BEEN ERECTED, WITHIN A VERY RECENT PERIOD, IN THE UNIVERSITY OF CAMBRIDGE.

three principal sections. 1. The Atlantic ocean, which divides Europe and Africa from America, and is, in general, about 3000 miles in width; 2. The Pacific ocean, or South Sea, which divides America from Asia, and is generally about 10,000 miles over; 3. The Indian ocean, which separates the East-Indies from Africa, and is 3000 miles across. The other seas, which are called oceans, are only parts or branches of these, and usually receive their names from the countries they border upon. The bed of the ocean presents the same irregularities of aspect as the surface of the land. It is diversified by rocks, mountains, plains, and deep valleys. In some places it has been found impossible to reach the bottom; but the notion that it is anywhere without a bottom is incompatible with the spherical figure of the earth. The greatest depth that ever has been sounded is 7200 feet (by Scoresby, in 1819). The level of the seas is, generally speaking, everywhere the same; arising from the equal pressure, in every direction, which the particles of a fluid exercise upon each other. The ocean, therefore, considered as a whole, has a spheroidal surface, which may be considered as the true surface of our planet. [See TIDES, SEA, &c.]

OCHLOC'RACY, a form of government in which the multitude or common people rule.

O'CHRE, in natural history, a genus of earths slightly coherent, composed of fine, smooth, soft, argillaceous particles, rough to the touch, and readily diffusible in water. Ochres are of various colours, as red, blue, yellow, brown, &c., and consist of alumina and red oxyde of iron. Native red ochre is called *reddle* and *red chalk* in England. The oxyde of iron is sometimes so considerable in this, that the ochre may be reckoned an ore of that metal.

O'CIMUM, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. The species are herbs or undershrubs, and consist of the different kinds of Basil.

OC'TAGON, in geometry, a figure of eight sides and eight angles. When all the sides and angles are equal, it is called a *regular octagon*.——In fortification, a place with eight bastions.

OCTAHE'DRON, in geometry, one of the five regular bodies, consisting of eight equal and equilateral triangles.

OCTAN'DRIA, the eighth class of the Linnæan system of plants, containing four orders, viz. *monogynia*, *digynia*, *tryginia*, and *tetragynia*, comprehending those plants which have hermaphrodite flowers, with eight stamens.

OC'TANT, an instrument for measuring angles, which by reflection it doubles, and hence it answers the purpose of a quadrant. ——*Octant*, in astronomy, an aspect of two planets when they are distant from each other 45 degrees, or the eighth part of a circle.

OC'TAVE, in music, the eighth interval in a scale of sounds, which, being the same as the first, is denoted by the same letter of the alphabet. The most simple perception that we can have of two sounds, is that of unisons; the vibrations there beginning and ending together. The next to this is the octave, where the more acute sound makes precisely two vibrations, while the grave or deeper one makes one; consequently, the vibrations of the two meet at every vibration of the more grave one. Hence unison and octave pass almost for the same concord: hence also the proportions of the two sounds that form the octave are in numbers or in lines, as 1 : 2, so that two chords or strings of the same matter, thickness, and tension, one whereof is double the length of the other, produce the octave. The number of upper and lower octaves, or the manner in which several octaves of different heights are to be chiefly distinguished, is not absolutely determined, on account of the continually increasing compass of instruments, particularly stringed instruments, and especially the pianoforte, which, within a short period, has increased a whole octave.

OCTA'VO, in printing, the form of a page which is made by folding a sheet into eight leaves, or sixteen pages. It is often written 8vo.

OCTO'BER, in chronology, the tenth month of the Julian year, consisting of thirty-one days: it obtained the name of October from its being the eighth month in the calendar of Romulus.

OCTODE''CIMAL, in crystalography, an epithet designating a crystal whose prisms have eight faces, and the two summits together ten faces.

OC'TOFID, in botany, an epithet for a calyx cleft or separated into eight segments.

OCTOLOC'ULAR, in botany, having eight cells for seeds.

OCTOPET'ALOUS, in botany, having eight petals or flower-leaves.

OCTOPH'ORUM, among the ancients, was a carriage with eight wheels. It signifies frequently a chair or litter, carried by eight men. This kind of chair was mostly used by the ladies.

OCTOSPERM'OUS, in botany, containing eight seeds.

OC'TOSTYLE, in the ancient architecture, is the face of an edifice adorned with eight columns. The eight columns of the octostyle may either be disposed in a right line, as in the Pantheon; or in a circle, as in the temple of Apollo Pythius at Delphi, &c.

OCTROI, an old French term (from *auctoritas*) signifying a grant or privilege from government, is particularly applied to the commercial privileges granted to a person or to a company. In a like sense the term is applied to the constitution of a state granted by a prince, in contradistinction to those which are derived from a compact between a ruler and the representatives of the people. It also signifies a tax levied at the gates of some cities in France upon all articles of food.

OC'ULAR PAR'ALLAX IN VISION, *and Law of Visible Direction*:—In the Pro-

ceedings of the British Association, as reported in the *Literary Gazette*, it is said, that the existence of an ocular parallax, which is the measure of the deviation of the visible from the real direction of objects, has been experimentally proved by Sir David Brewster. Assuming that the cornea and bottom of the retina have the same centre of curvature, which is correct, the line of visible direction would coincide with the line of real direction, if there were no crystaline lens. Minute deviations, however, are caused by the refraction on the surfaces of the crystaline, although, at an inclination of 30° to the axis the deviation is no more than half a degree, a quantity too small to interfere with the purposes of vision. At a greater inclination the deviation increases; but as the vision out of the axis is not distinct, and, as the distinctness increases according to the inclination of the incident ray, such deviation cannot be ascertained by ordinary observation: hence, Sir D. Brewster says, the mechanical principle of D'Alembert, and the law of Dr. Reid, are substantially true. The eye, however, has not the property of seeing visible points in their real directions."——In the *Athenæum* we find the following:—"*Preparations of the Eye*:—Sir David Brewster has laid before the British Association a series of beautiful preparations of the eye, made by Mr. Clay Wallace, an able oculist, in New York; calculated to establish some important points in the theory of vision. Mr. Wallace considers that the eye is adjusted to different distances, in two ways:—in eyes which have *spherical lenses* it is produced by a *falciform* or hook-shaped muscle, attached only to one side of the lens, which, by its construction, brings the crystaline lens nearer the retina. In this case, it is obvious that the lens will have a slight motion of rotation, and that the diameter, which was in the axis of vision previous to the contraction of the muscle, will be moved out of that axis after the adjustment, so that at different distances of the lens from the retina different diameters of it will be placed in the axis of vision. As the diameters of a sphere are all equal and similar, Mr. Wallace considers that vision would be equally perfect along the different diameters of the lens, brought by a rotation into the axis of vision. Sir David Brewster, however, remarks, that he has never found among his numerous examinations of the lenses of fishes any which are perfectly spherical, as they are all either *oblate* or *prolate* spheroids, so that along the different diameters of the solid lens the vision would not be similarly performed. But, independent of this circumstance, he states, that in every solid lens there is only one line or axis in which vision can be perfectly distinct; namely, the axis of the optical figure, or series of *positive* and *negative* luminous sectors, which are seen by the analysis of polarized light. Along every other diameter, the optical action of the lens is not symmetrical. When the lens is not a *sphere*, but *lenticular*, as in the human eye, or in the eyes of most quadrupeds, Mr. Wallace considers that the apparatus for adjustment is the ciliary processes, to which this office had been previously ascribed, though not on the same scientific grounds as those discovered by Mr. Wallace. One of the most important results of his dissections is the discovery of *fibres in the retina*. These fibres may be rendered distinctly visible. They diverge from the base of the optic nerve, and surround the *foramen ovale* of Soemmering at the extremity of the eye. Sir John Herschel supposed such fibres to be requisite in the explanation of the theory of vision; and it is, therefore, doubly interesting to find that they have been actually discovered."

OC'ULI CANCRO'RUM, in chemistry, crabs' eyes, or stony concretions found in the head of the *Astacus fluviatilis*. In its properties the earth of crabs' eyes resembles the earth of hartshorn, being a calcareous phosphate.

OC'ULUS. [See EYE.]

OC'ULUS BE'LI, a semi-pellucid gem, of a grayish-white colour variegated with yellow, and with a black central nucleus; it is of a roundish form, and its variegations represent the pupil and iris of the eye; whence the name.——*Oculus mundi*, otherwise called *hydrophane*, a precious stone of an opaque whitish brown colour, but becoming transparent by infusion in an aqueous fluid, and resuming its opacity when dry. It is found in Hungary, Silesia, and Iceland.——*Oculus cati*, or *asteria*, a beautiful gem, approaching the nature of the opal, having a bright colour which seems to be lodged deep in the stone, and which shifts as it is moved in various directions. It is larger than a pea, and generally semicircular.

ODAH'LIC, the name given to the females confined in the harems of the Turkish sultan.

ODE, a poem belonging to that class of lyrical compositions which express the feelings of the poet with the vividness which present emotion inspires. The ancient odes had originally but one stanza, or strophe, but afterwards they were divided into three parts, the *strophe*, the *antistrophe*, and the *epode*. The heroic ode celebrates heroes or sons of gods, princes, victory, greatness of mind, &c. In course of time love and festivities were likewise thought suitable to the ode. Here Anacreon and Sappho excelled, and Horace has left us some of both kinds written with peculiar sweetness and elegance. Among the moderns, Dryden's ode on St. Cecilia's Day, and Pope's on the same subject, are justly allowed to be superior to any others. The distinguishing character of an ode is sweetness; the poet is to soothe the minds of his readers by the variety of his verse, and the delicacy and liveliness of his expressions; for variety of numbers is essential to the ode. At first, indeed, the verse of the ode was but of one kind, but in order to adapt it to music, the poets so varied the measure, that their kinds are now almost innumerable. One of

the most considerable is the Pindaric, which is distinguished by its boldness and the rapidity of its flights; but Pindar, though the most daring and lofty of all the lyric poets, amidst all his raptures has preserved harmony, and often uniformity, in his versification; yet so great is his variety of measures that the traces of sameness are hardly perceptible.

ODONTAL'GIA, in medicine, the tooth-ache. This painful disease is too well known to require any description. It may attack persons at any period of life, though it is most frequent in the young and plethoric. From the variety of causes which may produce this affection, it has received various distinctive names.

ODONTAL'GICA, medicines which relieve the tooth-ache.

ODONTIA'SIS, in medicine, teething, or cutting the teeth.

ODONTOI'DES, in anatomy, an epithet for the tooth-like process of the second vertebræ of the neck.

ODE'ON, or ODE'UM, in Greek and Roman architecture, a public building devoted to poetical and musical contests. The first odeon was built at Athens by Pericles, and was afterwards used for popular meetings and the holding of courts. The odeons resembled other theatres, except that they were not so large, and were covered with a roof.——The name *Odeon* has been given to one of the theatres in Paris, rebuilt, after having been destroyed by fire, in 1818.

OD'YSSEY, a celebrated epic poem of Homer, wherein are related the adventures of Ulysses, in his return from the siege of Troy.

ŒCUMEN'ICAL, signifies the same with general, or universal; as œcumenical council, bishop, &c.

ŒDE'MA, in medicine and surgery, a sort of phlegmatic tumour, or anasarcous swelling, attended with paleness and cold, yielding little resistance, retaining the print of the finger when pressed with it, and accompanied with little or no pain.

ŒNISTE'RIA, in antiquity, sacrifices offered to Hercules by the Athenian youth on their first cutting their beards.

ŒNOTHE'RA, in botany, a genus of plants, class 8 *Octandria*, order 1 *Monogynia*. The species are biennials, and consist of the different kinds of Tree-primrose.

ŒSOPH'AGUS, in anatomy, the gullet, a membranous and muscular canal, reaching from the fauces to the stomach, and conveying into it the food taken at the mouth. Its figure is somewhat like a funnel, and its upper part is called the *pharynx*.

ŒS'TRUS, in natural history, the Gadfly, a genus of insects of the order *Diptera*. There are several species of this genus, most of which are extremely troublesome to horses, sheep, and cattle. The principal European species is the *Œstrus bovis*, or the ox-gadfly, which is of the size of a common bee. The female, when ready to deposit her eggs, fastens on the back of the animal, and piercing the skin with the tube situated at the lip of the abdomen, deposits an egg in the puncture, and then proceeds to another spot at some distance from the former, repeating the same operation at intervals. The pain which the operation occasions is extreme; and hence cattle, as if foreseeing their cruel enemy, are observed to be seized with horror when apprehensive of the approaches of the female œstrus, flying instantly to the nearest pond or pool of water, it having been observed that this insect rarely attacks cattle when standing in water.——The *Œstrus equi* deposits its eggs upon such parts of the skin of horses as are subject to be much licked by the animal, and thus they are conveyed to the stomach, where the heat speedily hatches the larvæ, so well known under the name of *botts*. The *Œstrus ovis* deposits its eggs in the nostrils of sheep, where the larva is hatched, and immediately ascends into the frontal sinuses, attaching itself very firmly to the lining membrane by means of two strong hooks situated at its mouth. All the insects of the genus *Œstrus* are thus distinguished: the trunk concealed between two tumid lips, which are merely separated by a small orifice; antennæ short and setaceous. The oviduct, through which the eggs are extruded, consists of a membranaceous, cylindrical tube, furnished with three short bristles. The pupa is hard, and of an oval form, burrowing in the earth and under stones, where it experiences its final transformation into a winged insect.

OFFEN'CE, in law, the violation of any law; this is termed *capital* if punished with death, and not capital if visited with any other punishment.

OF'FERINGS, in a scripture sense, denote gifts presented by men at the altar, in order to represent their entire dependence on and submission to the Deity. They constituted a principal part of the Israelitish worship. With regard to their meaning and object, these offerings were either thank-offerings and peace-offerings, which consisted of some animal, and were usually accompanied with offerings of vegetable food: or trespass and sin-offerings, in which only animals were used. In the last-mentioned cases, the priests were accustomed to sprinkle the parties who made the offerings with the blood of the victims, as a sign of reconciliation with Jehovah; and where the offering was an expression of the penitence and expiation of the whole people, it was usual to burn the victim; but if it concerned only private persons, the priests used to eat the flesh.——*Offerings*, in a modern sense, are church dues, payable by custom; as the Easter offerings, or the offerings at marriages, &c.

OFFERTO'RIUM, in archæology, a piece of silk, or fine linen, anciently made use of to wrap up the occasional offerings made in the church.

OF'FERTORY, in the Romish church, an anthem chanted or a voluntary played during the offering and a part of the mass. In the Church of England, it denotes certain sen-

GASES MIX EQUALLY, AND WHEN MIXED DO NOT SEPARATE. IF OF DIFFERENT GRAVITIES, THEY ARE DIFFUSED BY MUTUAL ABSORPTION.

tences in the communion office, read while the alms are being collected.

OF'FICE, a particular charge or trust, or a dignity attended with a public function; as the office of a secretary of state, the office of a sheriff, of a justice of peace, &c. ——*Offices* are civil, judicial, ministerial, executive, legislative, political, municipal, ecclesiastical, diplomatic, military, &c.—— *Office* also signifies a place or apartment appointed for officers, agents, clerks, &c. to attend in, in order to discharge their respective duties and employments.

OF'FICER, a person commissioned or authorized to fill a public situation or perform any public duty. Officers are civil, military, or ecclesiastical. The great officers of the crown, or of state, are the lord high-steward, the lord high-chancellor, the lord high-treasurer, the lord president of the council, the lord privy-seal, the lord-chamberlain, the lord high-constable, and the earl-marshal.——In the army, *General officers* are those whose command is not limited to a single company, troop, or regiment; but extends to a body of forces, composed of several regiments: such are the general, lieutenant-general, major-generals, and brigadiers. —— *Staff officers*, those who belong to the general staff, as the quarter-master-general, adjutant-general, aides-de-camp, &c. —— *Commissioned officers* are those appointed by a commission from the crown, from the general to the cornet inclusive. —— *Brevet officers*, those who hold a rank without pay, or take rank according to the commission which they hold from the sovereign, which is superior to the one for which they actually receive pay.——*Subaltern officers*, all officers under the rank of captain.——*Non-commissioned officers*, are serjeant-majors, quarter-master-serjeants, serjeants, corporals, and drum and fife-majors, who are appointed by the commanding officers of the regiments.——In the navy, officers are distinguished into—*Commissioned officers*, who hold their commissions from the lords of the admiralty;—*Flag officers*, admirals who hoist flags at the mast-head;—*Petty officers*, who are appointed by the captains.

OFFI'CIAL, an ecclesiastical judge appointed by a bishop, chapter, archdeacon, &c., with charge of the spiritual jurisdiction of the diocese.——*Official* is also a deputy appointed by an archdeacon, as his assistant, who sits as judge in the archdeacon's court.

OFFI'CINAL, in pharmacy, an appellation given to such medicines, whether simple or compound, as are directed by the colleges of physicians to be constantly kept in the apothecaries' shops.

OFF'ING, in sea-language, is a distance from the shore sufficient to afford deep water, and to need no assistance from a pilot to conduct a ship: thus we say, we saw a ship in the *offing*; or when a ship keeps at a distance from the shore, she is said to "keep her *offing*."

OFF'SET, in surveying, a perpendicular let fall from the stationary lines to the hedge, fence, or extremity of an inclosure. ——In accounts, a sum *set off* against another sum or account, as an equivalent.—— *Offset*, in gardening, the young shoots that spring from the roots of plants, which being carefully separated and planted in a proper soil, serve to propagate the species.

OGEE, or O. G., in architecture, a moulding, consisting of two members, the one concave, the other convex; or, of a round and a hollow, somewhat like an S.

O'GIVE, in architecture, an arch or branch of a Gothic vault; which, instead of being circular, passes diagonally from one angle to another, and forms a cross with the other arches. The middle, where the ogives cross each other, is called the key. The members or mouldings of the ogives are called nerves, branches, or reins; and the arches which separate the ogives, double arches.

OIL, an unctuous inflammable substance, derived from various substances, both animal and vegetable. The distinctive characters of oil are inflammability, fluidity, and insolubility in water. From the peculiar properties of different oils, they are naturally divided into two kinds, the fixed or fat oils, and the volatile or essential oils: the former require a high temperature to raise them to a state of vapour, but the volatile oils are volatilized at a temperature of boiling water, and even at a lower one. When exposed to the action of the air, the oils by degrees lose their liquidity, thicken, and occasionally become hard. Such as become indurated so as not to stain paper when applied to it, take the name of *drying* oils; such as linseed oil, poppy-seed oil, nut oil, &c. Such as do not harden in this way are called *unctuous* oils, as olive oil, almond oil, rape-seed oil, &c. Those which burn best are a compound of carbon and hydrogen, which, raised into gas by the application of a heated body, absorbs the adjacent oxygen in the air, and fixing it, thereby displays heat, flame, and light.——The fat oils are medicinally prescribed as relaxing, softening, and laxative remedies; they enter into many medical compounds, such as balsams, unguents, plasters, &c.; and they are often used as food on account of the mucilage they contain. Essential oils are employed as cordial, stimulant, and antispasmodic remedies.

OIL GAS. Very decided advantages were at one time claimed for oil gas over coal gas; but the superior cheapness of the latter, and the high state of perfection to which it has arrived, have in a measure superseded the use of the former. It may, however, be well to give the process of its manufacture:—A quantity of oil is placed in an air-tight vessel, in such a manner that it may flow into retorts, which are kept at a moderate red heat, and in such proportions as may regulate the production of gas to a convenient rate; and provision is made that this rate may be easily governed at the will of the operator. The oil, in its passage through the retorts, is principally decomposed, and converted into gas proper for illumination. As a further precaution,

PEARL-ASH UNITES CHEMICALLY WITH THE GREASE IN CLOTHES, AND AS IT FORMS A KIND OF OILY SOAP, IT EASILY WASHES OUT.

to purify the gas from oil which may be suspended in it in the state of vapour, it is conveyed into a wash vessel, where, by bubbling through water, it is further cooled, and rendered fit for use. It then passes, by a proper pipe, into a gasometer, from which it is suffered to branch off in pipes in the usual manner.

O'LEA, the Olive-tree, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*; consisting of the different kinds of olive trees.

OLE'FIANT GAS, in chemistry, a colourless elastic fluid, which has no taste, and scarcely any odour when pure. It extinguishes flame, is unable to support the respiration of animals, and is set on fire when a lighted candle is presented to it, burning slowly with a dense white light. It is prepared by mixing in a capacious retort six measures of strong alcohol with sixteen of concentrated sulphuric acid, or one measure of common alcohol and three of oil of vitriol, and heating the mixture over an argand lamp. The acid soon acts upon the alcohol; effervescence ensues, and olefiant gas passes over. When olefiant gas is mingled with chlorine in the proportion of one measure of the former to two of the latter, they form a mixture which takes fire on the approach of flame, and which burns rapidly, with formation of muriatic acid gas, and a deposition of a large quantity of charcoal. But if the gases are allowed to remain at rest after being mixed together, a very different action ensues. The chlorine, instead of decomposing the olefiant gas, enters into direct combination with it, and a yellow liquid, like oil, is generated. This substance is sometimes called *chloric ether* or *carburet of chlorine*. To obtain it pure, and in a dry state, it should be well washed with water, and then distilled from chloride of calcium; thus purified, it is a colourless, volatile liquid, of a peculiar sweetish taste and ethereal odour.

OLE'IC ACID, in chemistry, an oily fluid, without taste and smell. When potash and hog's lard are saponified, the margarate of the alkali separates in the form of a pearly looking solid, while the fluid fat remains in solution, combined with the potash. When the alkali is separated by tartaric acid, the oily principle of fat is obtained, which is purified by saponifying it again and again, recovering two or three times, by which means the whole of the margarate is separated. As this oil has the property of saturating bases, and forming neutral compounds, it is called an acid.

O'LEINE, in chemistry, the thin oily part of fats, naturally associated in them with glycerine, margarate, and stearine.

OLEOSAC'CHARUM, in chemistry, a mixture of oil and sugar.

OLERA'CEÆ, one of the Linnæan natural orders of plants, containing pot-herbs, as spinage, thyme, mint, &c.

OLFAC'TORY NERVES, the pair of nerves which proceed from the brain to the nose, by which the sense of smelling is preserved.

OLIBA'NUM, in chemistry, a gum-resin brought from Turkey and the East Indies, which consists of tears or drops of a transparent yellow colour and disagreeable smell. It was formerly much used for incense; and in medicine it is used in fumigations as a resolvent.

OL'IGARCHY, a form of government, wherein the administration of affairs is lodged in the hands of a few persons.

OL'IVE *(olea)*, in botany, a genus of trees belonging to the *diandria-monogynia* class of plants. The *olea Europea*, or common olive, the sort principally cultivated for its fruit, grows to the height of twenty or thirty feet, having an upright stem with numerous branches: the fruit is an unilocular drupe of a somewhat oval shape, containing an ovato-oblong nut with a kernel of the same shape: and it is almost the only example of a fruit with an oily pulp. The olive was celebrated in the mythology of the ancients; and olive wreaths were used to crown the brows of victors. By the Greeks and Romans it was revered, and was considered the emblem of peace and humility. It furnished that oil which, for a long time, was the only kind known, and which was employed by most nations in religious ceremonies. The *athletes* anointed their bodies with olive oil when preparing for gymnastic exercises; and it was very generally used in the same manner on coming out of the bath. The oil is still the principal product of the olive, and is consumed in immense quantities for culinary purposes in many countries. It is inodorous, and the taste is very mild; but if taken in large quantities it is purgative. The oil, together with the pickled fruit, is the source of a very extensive commerce between the Mediterranean and the north of Europe: in many districts the whole population is entirely dependent on this branch of business. The oil which is obtained by simple expression, without the use of boiling water, is the best and purest; and that made in some parts of France is now the most highly esteemed. The olive grows in every kind of soil, provided it is not marshy. Dr. Clarke mentions an interesting fact, "that, during a period of little more than two thousand years, Hebrews, Assyrians, Romans, Moslems, and Christians, have been successively in possession of the rocky mountains of Palestine; yet the olive still vindicates its paternal soil, and is found, at this day, upon the same spot which was called by the Hebrew writers *Mount Olivet*, and the *Mount of Olives*, eleven centuries before the Christian era."

OL'IVINE, in mineralogy a gem of inferior value, being a subspecies of prismatic chrysolite, of a brownish or olive-coloured green, often inclining to a yellow hue, usually found in roundish grains in other stones. It frequently occurs in basaltic rocks, and is met with in the vicinity of Vesuvius, also in Saxony, Silesia, Hungary, &c.

OLYM'PIAD, a period of four years, by which the Greeks reckoned their time. This method of computation took its rise from

the Olympic games, which were celebrated every fifth year near the city Olympia, in Peloponnesus. The Olympiads were sometimes called *Anni Iphiti*, from Iphitus, who instituted, or at least renewed the solemnity of the Olympic games. Chronologists differ with regard to the exact time of their commencement; but, according to the most prevalent opinion, the first Olympiad commenced 775 years before the birth of Christ, and 22 years before the foundation of Rome. The computation by Olympiads ceased at the three hundred and sixty-fourth Olympiad, in the year 440 of the Christian era. History is much indebted to the Olympiads: they have served to fix the time to many momentous events; and, indeed, before this method of computing time was observed, the history of Greece is mostly fabulous, or filled with anachronisms.

OLYM'PIC GAMES, in antiquity, solemn games among the Greeks in honour of the Olympian Jupiter, which were celebrated once in every four years, as above stated. Besides running, leaping, boxing, wrestling, and the quoit, there were horse-racing, chariot-racing, &c. Sometimes the prize of eloquence, poetry, and the other fine arts was disputed. The victor's prize in each of these contests was a wreath of wild olive. A prize of small value was chosen, that the combatants might be stimulated by courage and the love of glory, more than by the sordid hope of gain. In fact, the glory of the conquerors (who were termed *Olympionicæ*) was inestimable and immortal. Their statues were erected at Olympia in the sacred wood of Jove; they were conducted home in triumph on a car drawn by four horses; and were complimented by poets, painters, &c.; nay, many privileges and immunities were thenceforth conferred on them. Not only all the states of Greece, but foreign nations also resorted to these games, in great numbers, from the extremities of Egypt, from Libya, Sicily, and other countries. The combatants contended naked: at first they used to tie a scarf round their waist; but this having once thrown down a combatant by entangling his feet, and thereby caused him to lose the victory, it was thenceforth laid aside. The priestesses of Ceres excepted, no females were permitted to be present; and if any woman was found to have passed the river Alpheus during the solemnity, she was to be thrown headlong from a rock.

OM'BRE, a game at cards, borrowed from the Spaniards, and generally played by three persons, though sometimes by two or five.

OMBRE DE SOLIEL, or *shadow of the sun*, in heraldry, is when the sun is borne in armoury, so that the eyes, nose, and mouth, which at other times are represented, do not appear: and the colouring is so slight that the field is seen through it.

OME'GA, the name for the Greek long *o*. It was the last letter in the Greek alphabet, as *alpha* was the first; and from the expression in Revelations (c. i, v. 8), "I am Alpha and Omega, the beginning and the ending, saith the Lord, which is, and which was, and which is to come, the Almighty," the characters of alpha and omega became with the Christians symbolical hieroglyphics.

O'MELET, a kind of pancake or fritter, made of eggs and other ingredients; very usual in Spain and France.

O'MEN, literally an indication of some future event; but, in the history of superstition, an accident supposed to forerun misfortune. Among the ancients, there were omens which came from outward objects; and internal omens, or those which affected the persons themselves. Of this sort, were consternations, or *panic fears*, that seized upon men without any visible cause, and were therefore imputed to the demons, and especially to the god Pan. Nay, there are many persons at the present day, whose education and society might be expected to give them better ideas, who still talk seriously of presentiments or internal omens; and to whom almost every object, animate or inanimate, together with every circumstance that occurs, is reckoned ominous. The practice of making ordinary events ominous of good or bad fortune, probably took its rise in Egypt, the parent country of almost every superstition of paganism; but wherever it may have arisen, it spread itself over the inhabited globe, and still prevails among the vulgar and unenlightened of all nations.

OMEN'TUM, in anatomy, the caul or epiploon; a membranaceous covering of the bowels, usually furnished with a large quantity of fat; being placed under the peritonæum, and immediately above the intestines.

OM'NIBUS (Latin, the dative plural of *omnes*, all; *i. e. for all*), a word used for a long carriage now too well known as a public conveyance for passengers, to require a further description. They are of Parisian origin, and their acknowledged convenience soon brought them into use in London, &c.

OM'NIUM, a term applied to the public funds to express the whole of the stock or securities which the subscribers to a loan receive from government. As the omnium of every loan is the subject of extensive speculations, it generally is liable to considerable variations with respect to its current price, sometimes selling at a high premium, at other times at a discount.

OMO-HYOIDE'US, in anatomy, a muscle situated between the *os hyoides* and shoulder, which pulls the former obliquely downwards.

OM'PHACINE OIL, in chemistry, a viscous brown juice extracted from green olives; the word *omphacine* signifying that which pertains to or is expressed from unripe fruit. The wrestlers in the ancient gymnastic exercises used to anoint their bodies with this oil.

OMPHA'CION, the juice of unripe grapes; and by some applied to that of wild apples, or crabs, usually called *verjuice*.

OM'PHACITE, a mineral of a pale leek green colour, massive or disseminated, and in narrow radiated concretions.

THE ODOUR OF ONIONS, WHICH IS FOUND SO DISAGREEABLE, IS CAUSED BY THEIR CONTAINING A CONSIDERABLE QUANTITY OF SULPHUR.

OMPHACI'TIS, in botany, a small kind of gall or excrescence from the oak.

OMPHALOCE'LE, in surgery, an umbilical hernia, or rupture of the navel.

OM'PHALOPTER, or OMPHALOP'TIC, an optical glass that is convex on both sides; usually called a convex lens.

OMPHALOP'TOMY, in surgery, the operation of dividing the naval string.

ON'ION (*allium*), in botany, a genus of herbaceous plants, with biennial or perennial bulbous roots. About sixty species are known. The onion proper (*allium cepa*) is abundantly cultivated throughout Europe, and is used for various culinary purposes. It is essentially milder in warm climates than in the north.

ONEIROCRIT'ICA, the art of interpreting dreams, and foretelling future events from them. In the Scripture we frequently find, that under the Jewish dispensation, some men really predicted from dreams what truly came to pass, as was the case with Joseph, and also with Daniel during the captivity; but we ought not from these Scripture instances to conclude that dreams are capable of interpretation from artificial rules, because we have reason to suppose that a particular revelation was granted for the purpose.

ONEIROM'ANCY, the art of divination by dreams.

ONGLE'E, in heraldry, an appellation given to the talons or claws of beasts, or birds, when borne of a different colour from that of the body of the animal.

ONIS'CUS, in entomology, a genus of insects, which have limbs but no wings, and which have oblong bodies and numerous legs, or more than six pair. This genus comprehends the several sorts of millepedes.

ONOMATOPŒ'IA, in rhetoric, a figure where words are formed to resemble the sound made by the things signified; as the buzz of bees, the cackling of hens, &c.

ONTOL'OGY, the doctrine of being; a name formerly given to that branch of metaphysics which treats of the essential qualities of things.

O'NUS PROBAN'DI, in law, the burden of proving what has been alleged against another.

ON'YX, in mineralogy, a species of agate, stratified with opaque and translucent lines; being a semi-pellucid gem of different colours. The bluish white kind is looked upon as the true onyx of the ancients.—— In medicine, an abscess, or collection of pus between the lamellæ of the cornea; so called from its resemblance to the *onyx* stone. The diagnostic signs are, a white spot or speck, prominent, soft, and fluctuating.

O'OLITE, in mineralogy, a species of limestone composed of globules clustered together; sometimes occurring in concentric layers, at other times being compact, or radiated from the centre to the circumference.——The *oolitic series*, in geology, includes all the strata between the iron sand above and the red marl below. In these strata are found the best materials for building which the midland and eastern counties of England produce; and the formations are systematically divided into—1. *the upper oolite*, consisting of the oolitic strata of Portland, Aylesbury, &c. with the argillo-calcareous Purbeck strata; 2. *the middle oolite*, viz. the oolitic strata associated with the coral rag, calcareous sand and grit, &c.; and 3. *the lower oolite*, which contains numerous oolitic strata, occasionally divided by thin argillaceous beds, great argillo-calcareous formation of lias, and lias marl.

OPA''CITY, the quality of a body which renders it impervious to the rays of light. It may exist in bodies of any colour.

O'PAL, in mineralogy, a precious stone of various colours, which comes under the class of pellucid gems. It is found in many parts of Europe, especially in Hungary. When first dug out of the earth it is soft, but it hardens and diminishes in bulk by exposure to the air. The substance in which it is generally found is a ferruginous sandstone. It is generally dull owing to foreign admixtures; but in some a lively play of light is observable; while others show different colours by reflected and transmitted light. There are many varieties or species, the chief of which are, 1. *noble opal*, which exhibits brilliant and changeable reflections of green, blue, yellow, and red; 2. *fire opal*, which simply affords a red reflection; 3. *common opal*, whose colours are white, green, yellow, and red, but without the play of colours; 4. *semi-opal*, the varieties of which are more opaque than common opal; 5. *wood opal*, which appears in the shape of trunks, branches, and roots of trees; 6. *hydrophane*, which assumes a transparency only on being thrown into water; 7. *hyalite*, which occurs in small reniform and botryoidal shapes, and is transparent; and 8. *menilite*, which occurs in tuberose masses, and is opaque.

OPALES'CENCE, a coloured shining lustre reflected from a single spot in a mineral. It is sometimes simple, and sometimes radiated.

OP'ERA, a dramatic composition, of which music makes the essential part; and in this it is distinguished from other dramas accompanied by music. According as the serious or the comic character prevails in the opera, it is termed *opera seria* or *opera buffa*. The name of *grand opera* is given to that kind which is confined to music and song; of which the *recitativo* is a principal feature. An *operetta* is a short musical drama of a light character: to which species of composition the French *vaudeville* belongs. Italy may be considered the birth-place and cradle of the opera; but the German romantic operas have also, of late years, been cultivated with great success.

OP'ERA-GLASS, in optics, so called from its use in theatres, is a diagonal perspective, and consists of a tube of about four inches long, in each side of which there is a hole exactly against the middle of a

A SPURIOUS SUBSTANCE IS SOMETIMES SOLD FOR BLACK AND GREEN OPAL, AND SUBSTITUTED FOR IT IN ARTICLES OF JEWELLERY.

THE CHINESE PURIFY THE CRUDE OPIUM BY SEETHING IT, THEREBY GIVING TO IT A FRAGRANT AND AGREEABLE PERFUME.

GOOD OPIUM IS HARD IN THE COLD, BUT BECOMES FLEXIBLE AND DOUGHY WHEN IT IS WORKED BETWEEN THE HOT HANDS.

plane mirror, which reflects the rays falling upon it to the convex glass, through which they are refracted to the concave eye-glass, whence they emerge parallel to the eye at the hole in the tube; and as the glass is made to point at a different object from that which is viewed, it may be used without any one knowing exactly who is observed.

OPERA'TION, in surgery, any methodical action of the hand, with or without instruments as the case may require, on the human body, with a view to heal an injured or diseased part. The person who performs this is called an *operator*.——In chemistry, any process that leads to a given result.——Military or naval *operations*, signify the movements of an army or fleet, to effect some object of warfare.

OPER'CULUM, in conchology, the plate or lid with which some species of testaceous animals close the aperture of their shells.

OPHID'IAN, in zoology, a term designating the serpent species, or an order of vertebral animals destitute of feet or fins.

OPHID'ION, in ichthyology, a fish found in the Mediterranean, resembling the common eel, but shorter, more depressed, and of a paler colour.

OPHID'IUM, in ichthyology, a genus of fishes of the *Apodal* order; having the head naked; teeth both in the jaws and palate; gill-membrane seven-rayed; and body ensiform.

OPHIOL'OGY, that part of natural history which treats of serpents, or which arranges and describes the several kinds.

OPHIOM'ANCY, the art of divining or predicting events by the actions of serpents, as practised by the ancients.

O'PHITE, in mineralogy, serpentine or green porphyry; a dusky green stone of different shades, sprinkled with spots or crystals of a lighter green.

O'PHRYS, in botany, a genus of plants, class 20 *Gynandria*, order 1 *Diandria*. The species are bulbs.

OPHTHAL'MIA, in medicine, an inflammation of the mucous membrane which covers the globe of the eye, and of the correspondent surface of the eye-lids. Its characteristic marks are pain and redness, and it may be induced by many different exciting causes; as sudden transition from heat to cold; residence in damp or sandy countries in the hot season; exposure of the eyes to the vivid rays of the sun; the suppression of some habitual discharge, &c. ——The *ophthalmic nerve* is the first branch of the ganglion or expansion of the fifth pair of nerves.

OPHTHALMODYN'IA, in medicine, a violent pain in the eye, without any or with very little redness. The sensation of pain is various, as itching, burning, or as if gravel were between the globe of the eye and lids. There are various species of this disease, distinguished by names indicative of their respective symptoms.

OPHTHALMOPTO'SIS, in medicine, a falling down of the globe of the eye on the cheek, canthus, or upwards, the globe itself being scarce altered in magnitude. It is caused by a relaxation of the muscles and ligamentous expansions of the globe of the eye.

OPHTHALMOS'COPY, a term given to that branch of physiognomy which deduces the knowledge of a man's disposition from the appearance of the eyes.

O'PIUM, the inspissated juice of a species of poppy *(papaver somniferum)*, a native of Turkey and other Eastern countries, but now naturalized in many parts of Europe. Opium is the most energetic of narcotics, and at the same time one of the most valuable of medicines; but we have the authority of some of the most eminent physicians for asserting, that the habitual use of it is infinitely more injurious to the health than ardent spirits are, and that it has of late been greatly on the increase in this country. Indeed, so notorious is this fact, that the subject had called forth the particular attention of the different insurance offices, who found that they had sustained considerable loss from, as well as that a new risk had been created by, the enormous increase in the consumption of opium. Madden, in his travels in Turkey, &c., speaking of the opium-eaters of Constantinople, whom he saw in a coffee-house frequented by them, says, "Their gestures were frightful; those who were completely under the influence of the opium talked incoherently; their features were flushed; their eyes had an unnatural brilliancy, and the general expression of their countenances was horribly wild. The effect is usually produced in two hours, and lasts four or five. The debility, both moral and physical, attendant on its excitement, is terrible; the appetite is soon destroyed, and every fibre in the body trembles; the nerves of the neck become affected, and the muscles get rigid: several I have seen in this place who had wry necks and contracted fingers, but still cannot abandon the custom. They are miserable till the hour arrives for taking their daily dose."—The opium of commerce is in masses of different sizes. It is somewhat hard, of a brown colour, and a bitter, acrid, and nauseous taste. Its odour is peculiar and characteristic. It contains acidulous meconate of morphia, extractive matter, mucilage, fecula, resin, fixed oil, caoutchouc, a vegeto-animal substance, debris of vegetable fibres, and the white crystaline salt of opium, now known under the name of *narcotine*.—The following is the usual mode adopted in the preparation of opium in India. A little before the flower of the poppy is formed, a longitudinal incision is made in the stalk, close under the bulbous capsule which contains the rudiments of the flower. From this incision the opium exudes in the form of a gum, and is gathered by the women and children.

OPIN'ION, the judgment which the mind forms of any proposition, for the truth or falsehood of which there is not sufficient evidence to produce absolute belief. Some things are known to be scientifically correct, or capable of mathematical demonstration; but other things depend on testi-

mony. When one or two men relate a story including many circumstances to a third person, and another comes who positively contradicts it, either in whole or in part, he, to whom those jarring testimonies are given, weighs all the circumstances in his own mind, balances the one against the other, and lends an assent, more or less wavering, to that side on which the evidence appears to preponderate. This assent is his *opinion* respecting the facts of which he has received such different accounts.

OPOBAL'SAM, in medicine, the balm or balsam of Gilead, an odoriferous unguent and cosmetic, of a greenish yellow colour, a bitterish aromatic flavour, and an acidulous fragrant odour. The shrub or tree producing this balsam is of the genus *Amyris*, and grows spontaneously in Arabia Felix.

OPODEL'DOC, in pharmacy, a saponaceous camphorated liniment, being a solution of soap in alcohol, with the addition of camphor and essential oils; allowed to be a good remedy for sprains, bruises, &c.

OPO'PANAX, a gum resin, of a tolerably firm texture, usually brought in loose granules or drops, but sometimes in larger masses, of a reddish yellow colour, and white within. It has a strong smell and an acrid taste, and is obtained from the root of an umbelliferous plant (the *pastinaca opoponax)* growing in eastern climates.

OPOS'SUM, in zoology, an animal of the genus *Didelphis*, chiefly found in America, and living in holes and woody places. The female is remarkable for having a pouch in the abdomen, in which she protects and carries her young. On the ground the opossum's motions are awkward and clumsy; but on the branches of a tree he moves with great celerity and ease, using his tail, which is prehensile, to assist his motions. Instead of taking flight at the approach of danger, they lie close to the branch on which they were clinging: when they are discovered, they are taken by shaking the branch violently; they then drop to the ground, and, if the hunter is unaccompanied by dogs, they steal slowly away, and, gathering themselves into as small a compass as possible, remain perfectly quiet, as if feigning death. After remaining thus till they think themselves secure, they steal off; if, however, any sudden noise be made, they again assume their death-like position, in which they will persevere even when taken up and handled. This well known attribute of the opossum has given rise to the American proverb, "He is playing 'possum," which is applied to any one who is thought to be acting deceitfully.

OPPIL'ATIVES, medicines which shut up the pores

OPPOSITIFO'LIOUS, in botany, an epithet for a peduncle placed opposite to the leaf.

OPPOSI''TION, in politics, a word well understood in free representative governments, but nowhere else; denoting that intelligent and independent spirit in the members of either house of parliament which induces them to persevere in opposing whatever legislation is injurious to the state, but which does not so far influence them as to oppose what is beneficial. A temperate and consistent opposition is therefore an essential element of good government; for though it may struggle against an existing administration, it contributes at the same time to the soundness and vigour of the body politic. But when it blindly follows the dictates of an ambitious leader, merely to thwart the operations of government, or supports some clamorous demagogue, who prates about patriotism while he insidiously undermines the constitution, such opposition is justly designated *factious*, and held in abhorrence by all rational and honest men. The late Mr. Wilberforce described the party generally opposing those in power, as "never really wishing mischief to the country; but only so much mischief as might drive their opponents out, and place themselves in their room." Amiable statesmen! honest representatives! —— *Opposition*, in logic, the disagreement between propositions which have the same subject and the same predicate.——In rhetoric, a figure whereby two things are joined, which seem incompatible.——In geometry, the relation of two things, between which a line may be drawn perpendicular to both.——In astronomy, that aspect or situation of two stars or planets, wherein they are diametrically opposite to each other, or 180 degrees apart.

OP'TATIVE, in grammar, a mode or form of a Greek verb, by which is expressed the wish or desire to do a thing.

OPTE'RIA, in antiquity, presents made by the bridegroom to the bride when he first saw her.

OP'TICS, the science which treats of the causes of vision, and of the effects of light, direct, reflected, or refracted. In this comprehensive sense, Newton called his inimitable book on light and colours, a Treatise on *Optics*. In a more simple application, *optics* is the science of direct vision only; while the science of the laws and properties of the rays of light, when considered as reflected, are called *catoptrics*, and the science of refracted rays, *dioptrics;* so that, in its general sense, optics comprehends the whole of that of which catoptrics and dioptrics are two parts. From the days of Pythagoras to those of our contemporary, Sir David Brewster, the science of optics may be said to have been gradually developing. To give anything like a history of it, or to do justice to the eminent philosophers who have distinguished themselves in advancing it to its present state of perfection, would therefore be impossible in our limits. [Under the different heads of Light, Reflection, Refraction, the Eye, Microscope, Telescope, &c. &c., further information must be sought.]—— *Optic nerves*, in anatomy, the second pair of nerves of the brain, which perforate the bulb of the eye, and serve for the sense of sight.——*Optic angle*, is that which the

optic axes of the eyes make with one another, as they tend to meet at some distance before the eyes.——*Optic axis*, is the axis of the eye, or a line going through the middle of the pupil and centre of the eye.——*Optic place of a star*, in astronomy, that point of its orbit in which it appears to be to our eye.——*Optic pyramid*, a pyramid formed by rays drawn from the several points of the perimeter to the eye.

OPTI'MATES, in Roman antiquity, one of the divisions of the Roman people, opposed to the *Populares*. It does not certainly appear what were the characteristic differences betwixt these two parties. Some say the *Optimates* were warm supporters of the dignity of the chief magistrate, and sticklers for the grandeur of the state; caring little for the other classes: whereas the *Populares* boldly stood up for the rights of the people, pleaded for larger privileges, and laboured to bring matters nearer to a level. Tully says, that the Optimates were the best citizens, who wished to deserve the approbation of the better sort; and that the Populares courted the favour of the populace, not so much considering what was right, as what would please the people and gratify their own thirst of vain glory. Perhaps it was as difficult to define the true characters of the Optimates and Populares of ancient Rome, as it is to arrive at a satisfactory elucidation of the meaning of Tories and Whigs, or Conservatives and Liberals (to use the distinctive appellations applied by the parties to themselves) of the present day in Britain.

OPTI'ME, a scholar in the first class of mathematics at Cambridge.

OPTIMISM, that philosophical and religious doctrine which maintains that this world, in spite of its apparent imperfections, is the best that could have been devised, and that everything in nature is ordered for the best.

OR, in heraldry, a colour, otherwise called *gold*, or *yellow*, which is represented by small dots all over the field or charge.

OR'ACLE, in the history of heathen superstition and imposture, a pretended revelation of future events, or the will of supernatural powers, through the medium of a priest or priestess, the most famous of which were those of Apollo at Delphi, and of Jupiter Ammon in Thebes. In the founding of cities and colonies, the introduction of new governments, the undertaking of important enterprises, and particularly in all cases of great necessity, the oracles were consulted, and rich gifts presented to them. Darkness and ambiguity in the responses were made to cover those mistakes which would otherwise have disclosed the imposture; and thus for many centuries they obtained veneration and homage, not only of the ignorant multitude, but of monarchs, of warriors, and philosophers.

OR'ANGE-TREE (*citrus auranium*), in botany, a low, evergreen, branching tree, bearing leaves resembling those of the laurel, and white flowers, containing about twenty stamens, and disposed in clusters of from two to six upon a common peduncle. The fruit is globose, with a rough rind of a bright yellow colour, and contains a pulp, divided into eight or ten compartments, with seeds in each, and a sweet refreshing juice. The principal varieties are the sweet or China, and the bitter or Seville orange. Mr. Lindley thus speaks of the orange tribe: "The orange, the lemon, the lime, and the citron, fruits which, although natives of India, have now become so common in other countries as to give a tropical character to an European dessert, are the most remarkable products of this order. If to this be added the excellence of the wood, and the fragrance and beauty of their flowers, I know not if an order more interesting to man can be pointed out."—"The productiveness of the common orange is enormous. A single tree at St. Michael's has been known to produce 20,000 oranges fit for packing, exclusively of the damaged fruit and the waste, which may be calculated at one third more." Oranges form an extensive branch of commerce between the Mediterranean and the more northern countries. The tree is exceedingly long-lived; and an essential oil is obtained from the flowers, which is hardly less esteemed than the celebrated ottar of roses. The wood is fine-grained, compact, susceptible of a high polish, and is employed in the arts.

OR'ANGEMEN, the name given by the Catholics in Ireland to their Protestant countrymen, on account of their adherence to king William (of the house of Orange), while the former party supported the cause of James II.

ORANG-OU'TANG (*Simia Satyrus*), in zoology, the satyr or great ape, an animal with a flat face and deformed resemblance of the human form. These animals walk erect, feed on fruits, sleep on trees, and make a shelter against the inclemencies of the weather. They are remarkable for their strength, as well as their ability to use weapons with the hand. Cuvier says that the orang-outang is found only in south-eastern Asia, and that the African animal resembling it is the Chimpanzee *(Simia troglodytes)*.

ORATO'RIO, a musical performance of a dignified character, expressing various elevated and tender affections; dramatic, but destined only for musical execution, not for theatrical action. Properly speaking, the oratorio commenced when sacred music was distinctly separated from the worldly. Dr. Burney says, "they commenced with the fathers of the oratory; when, to draw youths to church, they had hymns and sacred stories written in dialogue and set to music. After the first part came the sermon, which the people were induced to stay and hear, to be present at the performance of the second part. The subjects, in early times, were the Good Samaritan, Prodigal Son, Tobit's Story, &c.; and by the excellence of the composition, the band of instruments, and the performance, the Oratory came into great repute;

THE PRIESTS ALLOWED NO MAN TO CONSULT THE ORACLES BEFORE HE HAD OFFERED COSTLY SACRIFICES, AND MADE RICH PRESENTS.

THE FIRST ORATORIO IN LONDON WAS PERFORMED AT LINCOLN'S INN THEATRE, SITUATED IN PORTUGAL-STREET, IN 1732.

and this species of musical drama obtained the general appellation of *Oratorio.*" In the beginning of the 18th century, Pariati, Ceva, Orsini, Spagna, and Metastasio, wrote oratorios; and Caldara, Jomelli, Buononcini, &c. composed the music. But a more elevated character was afterwards given to the oratorio by Handel, who devoted all his power to the chorus.

ORʹATOR, in modern usage, signifies an eloquent public speaker; or a person who pronounces a discourse publicly on some special occasion. In ancient Rome *orators* were advocates of a superior kind, differing from the *patrons:* the latter were allowed only to plead causes on behalf of their *clients;* whereas the former might quit the *forum* and ascend the *rostra* or *tribunal,* to harangue the *senate* or the people. The *orators* had rarely a profound knowledge of the law, but they were eloquent, and their style was generally correct and concise.

ORʹATORY, Priests of the, a religious order founded by Philip Nevi, in 1574, for the study of theology, and for superintending the religious exercises of the devout; but they are not bound by monastic vows. This order still exists in Italy; but the more important congregation of the *Fathers of the Oratory of Jesus,* founded at Paris in 1611, is no longer in existence.

ORʹATORY, the art by which a speaker is enabled to persuade and convince his hearers, according to the rules of rhetoric. It properly consists of four parts, namely, invention, disposition, elocution, and pronunciation. Quintilian says, "the faculty of speech we derive from nature; but the art from observation." To constitute oratory, the speaking must be just and pertinent to the subject; it must be methodical, all parts of the discourse being disposed in due order and connection; and it must be embellished with the beauties of language and pronounced with eloquence. Diction, manner, gesture, modulation, a methodical arrangement of the several topics to be introduced, and a logical illustration of them, are all essential requisites in oratory; and, as Cicero has observed, "the action of the body ought to be suited to the expressions, not in a theatrical way, mimicking the words by particular gesticulations, but in a manner expressive of the general sense, with a sedate and manly inflection."

ORB, in astronomy, a hollow sphere or space contained between two concentric spherical surfaces.

ORBICULAʹRIS, in anatomy, an appellation given to the constrictor-muscle of the lips, or *osculatorius;* as also to the constrictor of the upper eyelid, which rises from the upper apophysis of the maxillary bone, near the larger canthus of the eye, and surrounds the eyelid with a series of circular fibres: this is called *orbicularis palpebrarum.*

ORBICʹULATE, or ORBICʹULAR, in botany, an epithet for a leaf whose circumference is circular, or which has its longitudinal and transverse diameters equal.

ORʹBIT, in astronomy, the path of a planet or comet in its course round the sun: thus the earth's orbit is the curve which it describes in its annual revolution, and which is usually called the ecliptic. Modern astronomers consider the orbit of every planet as an ellipse, having the sun in one of its foci, and that they all move in these ellipses by this law, that a radius drawn from the centre of the sun to the centre of the planet always describes equal areas in equal times.——In anatomy, the two cavities under the forehead in which the eyes are situated, are termed *orbits;* and they are set in bony sockets, to maintain and defend the organ of sight and its adjacent parts.

ORʹCHESTRA, the space in theatres between the stage and the seats of the spectators. It was appropriated by the Greeks to the chorus and the musicians, by the Romans to the magistrates and senators, and by the moderns to the musicians. The word is also used to denote the whole instrumental band performing together in modern concerts, operas, or sacred music.

ORCHIDʹEÆ, in botany, consist of the Orchis, and other plants that resemble it. The flowers are hermaphrodite, and placed at the summit of the stalk, either in a spike, or in a panicle. The flowers of the different species are remarkably various and singular in their shape, resembling different kinds of animals or insects. In the butterfly orchis, the plant has ovate bulbs, tapering to a point at the base; thick fleshy fibres proceed above them from the base of the stem: one of these bulbs is always wrinkled and withered, while the other is plump and delicate: the first is the parent of the stem; the second is the offset, from the centre of which the stem of the succeeding year is destined to rise. Such are the means made use of by nature not only to disseminate plants, but to enable them to change their place, and thus to draw in fresh nourishment.

ORʹCINE, in chemistry, the name of the colouring principle of the *lichen dealbatus;* which, after various preparations, assumes a fine rich violet colour.

ORDEʹAL, an ancient mode of trial, in which an appeal was made to God to manifest the truth, by leaving nature to its ordinary course, if the accused were guilty; by interposing a miracle, if innocent. This mode of distributing justice in criminal charges prevailed, during the middle ages, throughout almost the whole of Europe; and it is still practised in some parts of the East Indies. In England it existed from the time of the Confessor to that of Henry III., who abolished it by declaration: while it lasted, the more popular modes of resorting to it were those of *fire* (or the hot iron), and of *water;* the former for freemen and people of rank, the latter for peasants. The method of administering the ordeal by fire, in England, was by placing nine red-hot plough-shares in a line, at certain distances from each other, and requiring the person accused to walk over them barefoot and blindfold. If his feet always

alighted in the spaces between the shares, so that he passed over them unhurt, his success was deemed a divine assertion of his innocence; if, on the contrary, he was burnt, the disaster was an oracular proof of his guilt. The *ordeal by water* was of two kinds; either by plunging the bare arm to the elbow in boiling water, or by casting the person suspected into a river or pond of cold water, and if he floated without an effort to swim, it was an evidence of guilt, but if he sunk he was acquitted.——*Ordeal by combat*, was when the person accused of murder was obliged to fight the next relation, &c. of the person deceased.—Modes of trial so liable to human collusion, and founded upon unwarranted ideas of the divine providence, have deservedly passed away; but the fact of their former existence remains attested by a form of words still required to be used by a person arraigned for trial. Such a one, in the days of ordeals, had it in his choice to put himself upon God and his country, or upon God alone. In the former case, he professed his readiness to abide the decision of a jury; in the latter he appealed to the ordeal, as to the immediate judgment of God. At present, the prisoner, on pleading "not guilty," and being asked "how he will be tried?" a question which alludes to the choice formerly allowed, is always to answer, "By God and the country;" so that, in reality, the question and reply have now no meaning.

ORDER, in natural history, a subdivision of a class, which is itself farther divided into genera, as these are into species. The orders in the Linnæan system of botany are founded on the number of styles or female organs. They are all expressed by a single term, which is of Greek etymology, and is significant of the character of the *order* to which it is applied.——*Order*, a term used in astronomy, and applied to the motion of a planet. Planetary bodies are said to go *according to the order of the signs*, when the apparent motion is direct, proceeding from Aries to Taurus, thence to Gemini, &c. Their apparent motion is *contrary to the order of signs*, when they seem to go backwards from Pisces to Aquarius, &c.—— The word *order*, in military concerns, is used in a variety of senses; either as to the disposition and arrangement of troops, or in that of command.

ORDERS, or HOLY ORDERS, denote the character and office peculiar to ecclesiastics, whereby they are set apart for the ministry. Since the Reformation, there are three orders of the clergy acknowledged, namely, bishops, priests, and deacons; whence the phrase, "to be in orders," is the same as to be of the clerical order.—— *Religious Orders*, associations, or societies of monastics, bound to lead strict and devotional lives, according to the prescribed rules of their respective communities. An order, in fact, consists in the rules to be observed by those who enter it; thus some orders are more austere than others, and one order dresses in white, while another is habited in gray or black: and synonymous with the expression, "the order of St. Francis," is, "the rule of St. Francis."—— *Military Orders* are societies established by princes, the members of which are distinguished by particular badges, and consist of persons who have done particular service to the prince and state, or who enjoy, by the privileges of birth, the highest distinctions in the state. They originated from the institutions of chivalry and the ecclesiastical corporations, and were, in the beginning, fraternities of men, who, in addition to particular duties enjoined by the law of honour, united for the performance of patriotic or Christian purposes. Free birth and an irreproachable life were the conditions of admission. During the time of the crusades numerous military orders arose, and were an example for all future orders. The oldest of the religious military orders is that of St. John of Jerusalem; and on their model the secular military orders were formed in later times, which united religious with military exercises. But the original pious object of these orders was changed, and they acquired by degrees their present character.——*Orders*, in law, rules made by the court in causes there depending. These orders are made by different courts, as the Chancery, King's Bench, &c.; and also, on particular occasions, orders are made by magistrates at the Sessions.—— *Orders*, in architecture. [See ARCHITECTURE.]

ORDINARY, in general signifies *common*, or *usual*; thus an ambassador or envoy *in ordinary*, is one sent to reside constantly at some foreign court, in order to preserve a good understanding, and watch over the interest of his own nation. This term is also applied to several officers in the royal household, who attend on common occasions, as "a physician or chaplain in ordinary."——*Ordinary*, in the common and canon law, one who has ordinary or immediate jurisdiction. In which sense, archdeacons are ordinaries; though the appellation is more frequently given to the bishop of the diocese, who has the ordinary ecclesiastical jurisdiction.——The *ordinary of Newgate* is a clergyman who is attendant in ordinary upon the prisoners in that gaol, preaches and reads prayers in the chapel, and attends and prays with condemned malefactors at the place of execution.—— *Ordinary*, in heraldry, is that sort of charge in court armour which is proper to the art, and in ordinary use therein, in distinction from common charges, which it has in common with other arts.——The word *ordinary* is also applied to designate a dinner at any inn or place of entertainment, where each person pays a certain fixed price for his meal.

ORDINATION, the conferring holy orders, or initiating a person into the priesthood. In the church of England the first thing necessary on application for holy orders, is the possession of a *title*; that is, a sort of assurance from a rector to the bishop, that, provided the latter finds the party fit to be ordained, the former will

take him for his curate, with a stated salary. The candidate is then examined by the bishop, or his chaplain, respecting both his faith and his erudition: and various certificates are necessary, particularly one signed by the clergyman of the parish in which he has resided during a given time. Subscription to the thirty-nine articles is required, and a clerk must have attained his twenty-third year before he can be ordained a deacon; and his twenty-fourth to receive priest's orders.——The ceremony of ordination is performed by the bishop by the imposition of hands on the person to be ordained. In the English church, and in most Protestant countries where the church is connected with the state, ordination is a requisite to preaching; but in some sects ordination is not considered necessary for that purpose, although it is considered proper previous to the administration of the sacraments by the preacher.—— In the presbyterian and congregational churches, *ordination* means the act of settling or establishing a licensed preacher over a congregation with pastoral charge and authority; or the act of conferring on a clergyman the powers of a settled minister of the Gospel, without the charge of a particular church, but with general powers wherever he may be called to officiate.

OR'DINANCE, in law, a temporary act of parliament, not introducing any new law, but founded on some act formerly made; consequently, such ordinances might be altered by subsequent ones.

OR'DINATE, in geometry and conic sections, a line drawn from any point of the circumference of an ellipsis or other conic section, perpendicularly across the axis to the other side.——*Ordinates of a curve*, right lines parallel to each other, terminated by the curve, and bisected by a right line called the diameter.

ORD'NANCE, a general name for artillery of every description.——*Ordnance Office*, or *Board of Ordnance*, an office kept within the Tower of London, which superintends and disposes of all the arms, instruments, and utensils of war, both by sea and land, in all the magazines, garrisons, and forts in Great Britain. The Board of Ordnance is divided into two distinct branches, the civil and the military; the latter being subordinate to, and under the authority of the former.——*Ordnance Debentures*, bills issued by the Board of Ordnance on the treasurer of that office for the payment of stores, &c.

ORES, a general name for metals in an unrefined state, as they are dug out of the earth, where they are found in the four following states: namely, 1. *pure*; that is, by themselves, in a pure metallic state, or as alloys, in combination with other metals; 2. as *sulphurets*, or in combination with sulphur; 3. as *oxydes*, or in combination with oxygen; and 4. as *salts*, that is, in combination with acids. After the metallic ores are drawn from the mine, they in general go through several processes before they are in a state fit for use. Some are first washed in running water, to clean them from loose, earthy particles: they are then piled together with combustible substances, and burned, or roasted, for the purpose of ridding them of the sulphur or arsenic with which they may happen to be combined, and which rises from them in a state of fume and smoke. Thus having been freed from impurities, they undergo the operation of melting, in furnaces constructed according to the nature of the respective metals, or the uses to which they are subsequently applied. Some melt readily of themselves; whereas others are so intractable, that they require the assistance of various fluxes before they will yield the metal. Assayers therefore distinguish ores into fusible, refractory, and infusible. Those are called *fusible* which, either by means of a moderate fire only, or by adding a fit menstruum to them, melt easily, so as to afford the metal or semi-metal contained in them. The *refractory* ores are those which require a very strong and lasting action of the fire, and the addition of proper fluxes, before they will melt. The substances naturally combined with metals, which mask their metallic characters, are chiefly oxygen, chlorine, sulphur, phosphorus, selenium, arsenic, water, and carbonic acid. But some metals, as gold, silver, and platinum, often occur in the metallic state, either alone, or forming native alloys by being in combination with other metals. [See METALS, MINES, &c.]

OR'GAN, an instrument designed for the production of some certain action or operation; in which sense, the mechanic powers, machines, and even the veins, arteries, nerves, muscles, and bones of the human body may be called organs. The *organs of sense* are those parts of the body by which we receive the impressions or ideas of external objects: thus, the ears are the organs of hearing; the nerves are the organs of perception and sensation; and the tongue is the organ of speech——What is meant by "organic world" comprises the animal and vegetable kingdoms. Minerals are not *organized* bodies. The various gradations of organized being, from man, through all the inferior animals, down to the most humble plant that grows, furnish a most curious and interesting subject of study.

OR'GAN, in music, a wind instrument, of ancient invention, blown by bellows, and containing numerous pipes of various kinds and dimensions, which, for its solemnity, grandeur, and rich volume of tone, is peculiarly fitted for the purposes for which it is commonly employed. Organs are sometimes of an immense size. St. Jerome mentions an organ with twelve pair of bellows, which might be heard at the distance of a thousand paces, or a mile; and another at Jerusalem, which might be heard at the Mount of Olives. The organ in the cathedral church at Ulm, in Germany, is said to be 93 feet high and 28 broad, its largest pipe being 13 inches in diameter, and it having sixteen pair of bellows.—The Greeks called the organ *organum*, to indicate instrumental mu-

sic, which, by uniting several pipes, imitated several voices; and to distinguish the organ from other musical instruments, the Romans called it *organum pneumaticum*, an instrument of air. By comparing different authorities, we should conclude that its introduction into Christian churches took place about the ninth or tenth century; and it became very general in England in subsequent times; but during the civil wars they were not only removed from the churches, but were so generally reprobated, that, at the Restoration, there could scarcely be found either organists, organ-builders, or singers.

ORGAN'IC REMAINS', an appellation given to all those animal and vegetable substances which have been dug out of the earth in a mineralized state. Modern investigations have brought these remains to light, as existing in the greatest variety of forms, in immense quantity, and with the widest possible distribution. The lowest and most level parts of the earth, when penetrated to a very great depth, exhibit strata containing innumerable marine productions. Similar formations compose hills, and even mountains, in which the shells are so numerous as to constitute the main body of the rock; and they are often in such a perfect state of preservation, that the smallest of them retain their most delicate processes. Almost every part of the globe presents the same phenomenon; and, what is at length perfectly established respecting these productions, they differ in specific, and often in generic resemblances, from the shells of the present day; and the differences between the extinct and living shells increase in proportion as we descend through the successive series of deposits that overspread the surface of the earth. Since the commencement of the present century very great progress has been made in the science of geology through the medium of geographical discoveries; for we find certain families of animals pervading strata of every age, and possessing the same generic forms which are to be found among existing animals. There are, however, other families, both animal and vegetable, which are confined to particular formations, where whole groups of these have been annihilated, and have been replaced by others bearing widely different characters. Many controversies have arisen, whether species have existed since the first formation of animals, or whether they were more simply formed at first, and have gradually improved by reproduction, and assumed more enlarged and more perfect forms, with new specific distinctions. On this subject Mr. Lyell thus expresses himself—and the observation is so rational and convincing, that we readily adopt his opinion—"that species have a real existence in nature, and that each was endowed, at the time of its creation, with the attributes and organization by which it is now distinguished." As respects vegetable remains in a fossil state, subterranean collections of bituminized wood, and other vegetable matter, are found at various depths in different parts of the world. Cannel coal, as well as anthracite, frequently exhibits traces of ligneous texture in its substance, which could have been derived only from wood. The argillaceous ironstone and slates that accompany coal, contain, with remains of many other unknown vegetables, parts of various cryptogamous plants, the recent analogies of which are found only in tropical regions. But we cannot pursue a subject so comprehensive in its range without trespassing far too much on the prescribed limits of our work; and conclude with this general remark—that the discovery of animals peculiar to certain formations, and the general agreement with each other of the fossils of the same formations, have led to the belief that these several formations were the consequences of successive changes effected on the earth's surface; and that the contained fossils are the preserved remains of the several creations which had been successively formed to accord with the state of our planet under its several changes. [See GEOLOGY, FOSSILS, &c.]

ORGANIZA'TION, the act of forming or arranging the parts of a compound or complex body in a suitable manner for use or service. Also the act of distributing into suitable divisions and appointing the proper officers, as an army or a government.

ORGANOL'OGY, an interesting branch of physiology which specially treats of the different organs of animals, but more particularly those of the human species.

OR'GIA, in antiquity, feasts and sacrifices performed in honour of Bacchus, instituted by Orpheus, and chiefly celebrated on the mountains by wild, distracted women, called *bacchæ*.——These feasts were held in the night: hence the term, "nocturnal orgies." [See BACCHANALIA.]

OR'GUES, in the military art, a machine composed of several musket barrels united, by means of which several explosions are made at once, to defend breaches. Also, long thick pieces of timber, pointed and shod with iron, and hung over a gateway, to be let down in case of attack.

OR'ICHALCH, or ORICHAL'CUM, in antiquity, a metallic substance resembling gold in colour, but very inferior in value. It was known both to the Greeks and Romans; and though it has been a matter of dispute, with philosophers and others, what this metal could be, or how it was procured or made, it is highly probable that it was either the same kind of composition as our brass, or a mixed metal very analogous to it.

O'RIENT, in geography and astronomy, the east, or eastern point of the horizon; thus called, because it is the point where the sun rises. Hence the *equinoctial orient* is used for that point of the horizon where the sun rises, when he is in the equator, or enters the signs of Aries and Libra; the *æstival orient* is the point wherein the sun rises in the middle of summer, when the days are longest; and the *hibernal orient*, the point where the sun rises in the middle of winter, when the days are shortest.

IN THE TERTIARY SERIES OF FORMATIONS ARE FOUND NUMEROUS FOSSILS, OF BOTH ANIMALS AND VEGETABLES, WITH PERFECT ORGANIZATION.

ORIENTALS, the natives or inhabitants of the Eastern parts of the world. It is common to give this appellation to the inhabitants of Asia from the Hellespont and Mediterranean to Japan ——An *orientalism* is an idiom of the eastern languages.——An *orientalist*, one versed in the eastern languages and literature.

ORIGENISTS, in the history of the church, followers of Origen of Alexandria, a celebrated Christian father, who held that the souls of men have a pre-existent state; that they are holy intelligences, and sin before they are united to the body, &c.

ORILLON, in fortification, a round mass of earth faced with a wall, raised on the shoulder of those bastions that have casemates to cover the cannon of the retired flank.

ORION, in astronomy, a constellation of the southern hemisphere; consisting of thirty-seven stars, according to Ptolemy; of sixty-two, according to Tycho; and of eighty in the Britannic catalogue.

ORLE, in heraldry, an ordinary forming a border or selvage within the shield, at some distance from the edges.

ORIFLAMME, the old royal standard of France, originally the church banner of the abbey of St. Denis. It was a piece of red taffeta fixed on a golden spear, in the form of a banner, and cut into three points, each of which was adorned with a tassel of green silk.

ORIOLE, in ornithology, a beautiful bird, of which there are several species, well known in the United States of America by the richness of their plumage and the peculiar form of their nests.

ORLOP, in a ship of war, a platform of planks laid over the beams in the hold, on which the cables are usually coiled. It contains also sail-rooms, carpenters' cabins and other apartments.

ORNITHOLOGY, that branch of natural history which treats of birds, describing their structure, form, habits, manners, and other characteristic properties. Those who are skilled in this study are termed *ornithologists*.—The symmetry and beauty displayed in the graceful forms and varied colours of the feathered tribe, and the wonderful adaptation of their structure to their peculiar habits and modes of living, strike the most casual and inattentive observer of nature's works. Every part of their frame is formed for lightness and buoyancy: their bodies are covered with a soft and delicate plumage, admirably calculated to protect them from cold and moisture; their wings, although of the lightest materials, are furnished with muscles of such power as to strike the air with great force, and to impel their bodies forward with astonishing rapidity, whilst the tail acts as a rudder, by which their course can be directed at pleasure. And their internal structure is in perfect consonance with those external peculiarities. The voice of birds is a peculiar gift of nature, by which the greater part are distinguished from all the rest of the animal creation. At the bifurcation of the windpipe is a glottis supplied with appropriate muscles, called the lower or inferior larynx: it is here that the voice is formed; the vast body of air contained in the air-cells contributes to the force, and the windpipe, by its form and movements, to the modification of the voice. The gift of song is given to the male birds only, and their notes are mostly an expression of love; hence they are heard singing chiefly at the time of pairing. To no other creature have such various tones been granted for giving utterance to different feelings; hunger, fear, the dread of imminent danger, desire for society, or longing for his mate, &c., are expressed by a variety of notes, which make a language intelligible not only to birds of the same species, but also to the other tribes. Almost all birds incubate, or hatch their eggs, by keeping them at a uniform temperature by brooding over them; and before laying, they are directed by instinct to the operation of building a nest or habitation for their young; many of which are constructed with such exquisite skill as to exceed the utmost exertion of human ingenuity to imitate them. How assiduously is the work of incubation performed! With what parental care and tenderness are the young watched over and protected, till they are gradually taught to fly, and become qualified to provide for themselves! The whole economy of birds, indeed, is calculated to excite our wonder, and to fill our minds with admiration.—Birds, although the most marked of all the classes of animals, resemble each other so closely in their specific character, that their subdivision is extremely difficult. In the Linnæan system they are arranged, according to the form of their bills, into six orders, viz. 1. *Accipitres*, as eagles, vultures, and hawks. These are a rapacious tribe, feeding on carcasses, however putrid, but, unless pressed with hunger, seldom attacking living animals: they are bold, gregarious, fly slowly, unless when very high in the air; and they have an exquisite sense of smell. 2. *Picæ*, as crows, jackdaws, parrots, &c. These live in pairs; have their nests in trees, and the male feeds his mate while she is sitting: their food is various filthy substances. 3. *Anseres*, as ducks, geese, swans, gulls, &c. These are frequently polygamous: the mother takes little care in providing for their young: they build their nest mostly on the ground: their food fish, frogs, worms, and aquatic plants. 4. *Grallæ*, as herons, woodcocks, ostriches, &c. These have their nest on the ground: they live on marsh animalcules: their legs are naked above the knees; 5. *Gallinæ*, as peacocks, pheasants, turkies, common fowls, &c. The food of these birds consists of grain and seeds, which they scratch from the ground and macerate in the crop: they make their nest on the ground with very little care: they are polygamous, and fond of rolling in the dust. 6. *Passeres*, including sparrows, larks, swallows, &c. This order is divided into the *pure*, or such as feed on grain; and the *impure*, or those that live on insects. They live chiefly in

THE PRACTICE OF RECEIVING ORPHANS, IS AN IMPORTANT POINT OF POLITICAL ECONOMY.

trees and hedges; are monogamous, vocal, and feed their young by thrusting the food down their throats.

OROG'RAPHY, or OROL'OGY, the science which describes mountains, with regard to their height and form, their chains, branches, &c. The method of measuring the heights of mountains was formerly by trigonometrical survey; but in modern times it has been usual to ascertain their heights by barometrical observation, as being much more convenient, and sufficiently correct for all practical purposes. ——That branch of geology, which investigates the materials of which mountains are composed, is denominated *oryctology*.

OR'NUS, in botany, a species of the *fravinus*, or ash tree, which produces the manna.

OR'PHAN, a fatherless child or minor; or one that is deprived both of father and mother. The lord-chancellor is the general guardian of all orphans and minors throughout the realm.—In London the lord-mayor and aldermen have the custody of the orphans of deceased freemen, and also the keeping of their lands and goods: accordingly, the executors or administrators of freemen leaving such orphans, are to exhibit inventories of the estate of the deceased, and give security to the chamberlain of London for the orphan's part.

OR'PHEUS, in ichthyology, the name of a fish caught in the Archipelago. It is of a broad and flat figure, and of a fine purple colour; its eyes are large and prominent, its teeth serrated, and it has only one fin on the back. This was the fish anciently so named; but by the modern Greeks, a fish of the *Sparus* species has received the name of Orpheus, and is much esteemed by them as food.

OR'PIMENT, or SUL'PHURET OF AR'SENIC, a mineral powder composed of sulphur and arsenic, sometimes artificially produced, but found also native, and constituting one of the ores of arsenic. It is of two kinds, red and yellow. The native orpiment appears in brilliant, gold-like masses of various sizes, flexible, soft to the touch like talc, and sparkling when broken. The red orpiment is called *realgar*. When crystalized in bright needles, it is called *ruby of arsenic*.

OR'RERY, a curious machine for representing the motions of the heavenly bodies; so called because one, copied from the original invention of a Mr. George Graham, was first made for the earl of Orrery. It consists of representations of the planets, and of the zodiac, and other lines imagined by astronomers. By means of an orrery, persons who have not leisure to study astronomy may, in the space of a few days, obtain a competent knowledge of several of the celestial phenomena, and the motion of the earth; its principal use being to render the theory of the earth and moon intelligible, and to make evident to the senses the causes of those appearances that depend on the annual or diurnal rotation of the earth, and the monthly revolutions of the moon.—— Many attempts have been made to produce what are called *transparent orreries*, by means of the magic lantern; but they are, at best, a very imperfect substitute for the mechanical apparatus we are describing. The orrery is sometimes called a *planetarium*; but there is this difference between them, that a planetarium exhibits by wheelwork the periodic or tropical revolutions of the primary planets round the sun, whereas the orrery gives besides the revolutions of the primary planets, the revolutions of some or all of the secondaries, and the rotation of the earth, together with the moon's anomalistic revolution, and her revolution with respect to the retrograde motion of the nodes. Hence the orrery, when constructed on its most comprehensive plan, may be said to comprise within itself the planetarium, the tellarium, the lunarium, and the machine for Jupiter's satellites.

OR'RIS ROOT, the root of a white-flowering species of iris, the *Iris Florentina*, a native of the south of Europe. It is exported from the Mediterranean in considerable quantities, and among other uses is employed in the manufacture of hair-powder, the odour it communicates resembling that of violets.

ORTHODROM'ICS, in navigation, the art of sailing on the arc of a great circle.

ORTHOG'RAPHY, that part of grammar which teaches the nature and properties of letters, and the proper spelling or writing of words. A correct pronunciation of words is *orthoepy*.——In geometry, the art of drawing or delineating the fore right plan of any object, and of expressing the heights or elevations of each part, so called from its determining things by perpendicular lines falling on the geometrical plan.——In architecture, the elevation or represention of the front of a building.——The *internal orthography*, called also a *section*, is a delineation of a building, such as it would appear if the external wall were removed.——In perspective, the right side of any plane, *i. e.* the side or plane that lies parallel to a straight line which may be imagined to pass through the outward convex points of the eyes, continued to a convenient length.——In fortification, the profile or representation of a work in all its parts, as they would appear if perpendicularly cut from top to bottom. ——*Orthographic Projection of the Sphere*, is that projection which is made upon a plane passing through the middle of the sphere, by an eye placed vertically at an infinite distance.

OR'TIVE, in astronomy, rising, or eastern. The *ortive* amplitude of a planet is an arc of the horizon intercepted between the point where a star rises, and the east point of the horizon, the point where the horizon and equator intersect.

OR'TOLAN (*emberiza hortulana*), in ornithology, a bird about the size of a lark, celebrated in the annals of gastronomy, which visits England previous to the severe weather of winter. It appears to be identical with the *miliaria* of Varro, which was sold at such enormous prices to the epi-

IN THE MIDDLE AGES, WHEN SO MANY INSTITUTIONS BENEFICIAL TO MANKIND ORIGINATED, ASYLUMS FOR ORPHAN CHILDREN BECAME FREQUENT.

OXYDE OF OSMIUM BECOMES OF A DARK COLOUR WITH ALCOHOL OR ETHER, AND AFTER SOME TIME SEPARATES IN THE FORM OF BLACK FILMS.

cures of Rome. Their flesh is said to be extremely delicate, but so rich as soon to satiate the appetite. The ortolan is yellow on the throat and round the eyes; the breast and belly are red; and the upper part of the body brown, varied with black.

ORYCTOG'NOSY, that branch of mineralogy which has for its object the classification of minerals according to well ascertained characters, and under appropriate denominations.

ORYCTOG'RAPHY, or ORYCTOL'OGY, that part of natural history which treats of fossils.

OSCILLA'TION, the motion of a propelled body, as a pendulum, when restrained at right angles to the direction of force; the body, in consequence, ascends in a curve, and descending by its own accelerated weight, rises again on the opposite side, continuing this oscillation till the friction of the centre and the air have taken away, or received the original force. The time is the same in the same pendulum, whatever be the length of the oscillation, but in pendulums of different lengths the time is as the square root of the length; thus, a pendulum of 36 inches vibrates but a sixth of the time of one of six inches.——*Axis of oscillation* is a right line passing through the point of suspension parallel to the horizon.——*Centre of oscillation* is that point in a vibrating body in which, if all the matter of the body were collected into it, the vibrations would be performed in the same time as before.

OSCI'NES, in antiquity, an appellation given by the Romans to those birds whose chattering and notes were regarded as omens and predictions. Of this sort were crows, pies, jays, owls, ravens, &c.

OSCHOPHO'RIA, in antiquity, an Athenian festival instituted in honour of Theseus, for his services to his country in destroying the Minotaur.——The *Oschophoria* are supposed by some to have been instituted in honour of Minerva and Bacchus, who assisted Theseus in his enterprise. Others imagine they were in honour of Bacchus and Ariadne.

OSCULA'TION, in geometry, the contact between any given curve and its *osculatory* circle, that is, a circle of the same curvature with the given curve.

OS'MAZOME, in chemistry, a peculiar substance, or animal principle obtained from muscular fibre, by evaporation and the aid of pure alcohol.

OS'MIUM, a metal not long since discovered, of a dark gray colour, and contained in the ore of platinum. With copper and with gold it forms malleable alloys, which are easily dissolved in nitro-muriatic acid, and afford by distillation the oxyde of osmium. It is insoluble in the acids, readily soluble in potassa, and very volatile. It takes its name from the singular odour of its oxyde.

OS'PREY, or OS'SIFRAGE, (*ossifraga*) in ornithology, the sea-eagle, a fowl of the genus *Falco*, of the size of a peacock. It feeds on fish, which it takes by suddenly darting upon them when near the surface of the water.

OSSIFICA'TION, in medicine, the process of changing from flesh membraneous substances, or other matter of animal bodies, into a bony substance.

OSSILE'GIUM, in antiquity, the act of collecting the bones and ashes of the dead after the funeral-pile was consumed, and which was performed by the friends or near relations of the deceased, who first washed their hands and ungirt their garments. When all the bones were collected, they were washed with wine, milk, perfumes, and the tears of friends; after this ceremony was over, the relics were put into an urn, and deposited in a sepulchre.

OSTEOCOL'LA, a fossil formed by incrustation on the stem of a plant, and consisting of carbonate of lime. It is found in long, thick, and irregular cylindric pieces, either hollow or filled with calcareous earth. It obtained its name from an opinion that it had the quality of uniting fractured bones.——Also, the name given to glue obtained from bones.

OSTEOL'OGY, that part of anatomy which treats of the bones.

OS'TIUM, in antiquity, the mouth or entrance of a harbour, between the arms of the semicircle, which was generally the figure of their harbours.

OS'TRACISM, in Grecian antiquity, a kind of popular judgment or condemnation among the Athenians, whereby such persons as had power and popularity enough to attempt anything against the public liberty were banished for a term of ten years. This punishment was called *ostracism*, from a Greek word which properly signifies a shell; but, when applied to this object, it is used for the billet on which the Athenians wrote the names of the citizens whom they intended to banish, which was a piece of baked earth, or a tile, in the form of a shell. If 6000 of the shells deposited in the place appointed were in favour of the banishment of the accused, it took effect; otherwise he was acquitted. After the expiration of ten years, the exiled citizen was at liberty to return to his country, and take possession of his wealth, and all his civil privileges. To this sentence no disgrace was attached; for it was never inflicted upon criminals, but only upon those who had excited the jealousy or suspicion of their fellow-citizens, by the influence they had gained by peculiar merit, wealth, or other causes. Aristotle and Plutarch called ostracism "the medicine of the state."

OS'TRACITE, an oyster-shell in its fossil state. It is found in many parts of England, and in some places is held in high repute for its efficacy in cases of gravel.

OS'TRICH *(struthio)*, in ornithology, a bird distinguished by its immense size and peculiar habits, as well as by the beauty and value of its plumage. The African or true ostrich *(struthio camelus)* is from seven to nine feet high from the top of its head to the ground; most of this, however, is made up by the great length of its neck. Its

"PUBLIC ENVY IS AN OSTRACISM, THAT ECLIPSETH MEN WHEN THEY GROW TOO GREAT; AND THEREFORE IT IS A BRIDLE TO KEEP THEM WITHIN BOUNDS."

thighs and the sides of the body are naked, and the wings are so short as to be unfit for flying. It inhabits the burning and sandy deserts of Africa in large flocks; and its speed in running exceeds that of the fleetest horse, which renders the ostrich hunter's task exceedingly laborious. The female lays from ten to twelve eggs in a hole in the sand; and, although she does not incubate them continually, no bird has a stronger affection for its offspring, or watches its nest with more assiduity; always brooding over her eggs at night, and only leaving them during the hottest part of the day. The eggs are said to be a great delicacy, and prepared for the table in various ways. The digestive powers of the ostrich appear almost incredible, and its voracity is equal to its digestion. The American ostrich (*struthio rhea*) is a smaller species than the African, but in everything, except the beauty of its plumage, it bears a close resemblance to it.

OTTAR (or ATTAR) of ROSES, the most elegant perfume known, being an aromatic oil obtained from the flowers of the rose, but in such small quantities that half an ounce can hardly be procured from a hundred pounds of the petals. It is brought from Turkey and the East-Indies; and, when genuine, is sold at a most exorbitant price. It is frequently adulterated with oil of sandal wood. Bishop Heber, in his Narrative of Travels and Residence in India; has given the following account of the cultivation and manufacture of this valuable perfume: "Ghazedpore is celebrated throughout India for the beauty and extent of its rose-gardens; the fields occupy many hundred acres; the roses are cultivated for distillation, and for making attar. The price of a sieve, or two pounds weight, a large quart, is eighteen linas, or a shilling. The attar is obtained after the rose-water is made, by setting it out during the night, until sunrise, in large open vessels, exposed to the air, and then skimming off the essential oil which floats on the top. To produce one rupee's weight of attar, 200,000 well grown roses are required. The juice even on the spot is extravagantly dear, a rupee's weight being sold at the bazaar for 8*l.* sterling, and at the English warehouse for 10*l.* Mr. Melville, who made some for himself, calculated that the rent of the land and price of utensils really cost him 5*l.* for the above quantity."

OTTER (*lutra communis*), in zoology, an amphibious quadruped, remarkably sagacious in the construction of its house under ground. It inhabits the banks of rivers, and feeds principally on fish. The feet are palmated, and the tail is half the length of its body, the fur of which is much esteemed. It is fierce and crafty when attacked, but may easily be tamed when young, and taught to catch fish. When the otter, in its wild state, has taken a fish, it carries it on shore, and devours the head and upper parts, rejecting the remainder. When hunted by dogs, it defends itself very obstinately, often inflicting on them the severest wounds.

——The American otter (*lutra Braziliensis*) is taken in great numbers in Canada, nearly 20,000 skins having been sent to England in one year by the Hudson's Bay company. Its habits are the same as that of the European species, but it is larger, and the fur much more valuable. The common mode of taking them is by sinking a steel trap near the mouth of their burrow.——The *sea-otter*, which is a much larger species than the others, is about the size of a large mastiff, and weighing about 70 or 80lbs. When in full season the fur is a fine glossy black, and sells at very high prices in China, where the skins are usually taken. It is exclusively found between the 49th and 60th degrees north latitude, and always frequents the coast.

OTTOMAN, an appellation given to what pertains to the Turks or their government; as, the *Ottoman* power or empire. The word originated in Othman, the name of a sultan who assumed the government about the year 1300. The finest countries of the old world have been ruled for five hundred years by the Turks, or Ottomans, a mixed people, composed of Tartars, robbers, slaves, and kidnapped Christian children. Such, alas! are the reverses in the fate of nations, that a horde of barbarian robbers, issuing from the steppes of Northern Asia, have been able to profane with Asiatic despotism the classic soil of Greece, where, 2,500 years ago, the independence of Europe was maintained, and the arts, under the fostering hand of civil freedom, arose and flourished.

OUNCE, in commerce, a weight for different purposes: in Avoirdupois weight, the sixteenth part of a pound; in Troy weight, the twelfth part; in Apothecaries' weight, equal to eight drams.——*Ounce*, in zoology, an animal of the leopard kind, but smaller and milder than the other species.

OUTLAWRY, the putting a man out of the protection of law, or the process by which a man is deprived of that protection. A defendant is outlawed in Great Britain, upon certain proceedings being had, when he does not appear to answer to an indictment or process. On an outlawry for felony, the person forfeits his lands, goods, and chattels. In personal actions, the goods and chattels only are liable; and they are forfeited to the king, with the profits of the lands; for the party being without the law, is incapable of taking care of them himself. In an indictment for treason or felony, an outlawryof the party indicted is equivalent to a conviction. But in the case of either treason or felony, an outlawry may be reversed by writ of error, or plea; and the judgment upon the reversal is, that the party shall be restored to all that he lost, &c.; he must, however, plead to the indictment against him.

OUTRIGGER, a strong beam of timber, of which there are many, fixed on the side of a ship and projecting from it, in order to secure the masts in the operation of careening, by counteracting the strain it suffers from the effort of the careening tackle.

Also, a small boom, occasionally used in the tops, to give additional security to the topmast.

OUTWORKS, in fortification, all those works of a fortress which are situated without the principal wall, within or beyond the principal ditch. They are designed not only to cover the body of the place, but also to keep the enemy at a distance, and prevent his taking advantage of the cavities and elevations usually found in the places about the counterscarp, which might serve them either as lodgments, or as rideaux, to facilitate the carrying on their trenches, and planting their batteries against the place: such are ravelins, tenailles, horn-works, crown-works, &c.

O'VAL, an oblong curvilinear figure, resembling the longitudinal section of an egg. The mathematical oval, which is a regular figure equally broad at each end, and therefore is not strictly egg-shaped, is called an ellipsis.

O'VATE, in botany, egg-shaped, as an *ovate* leaf.——*Ovate-subulate*, having something of the form of an egg and a lance, inclining to the latter.

OVA'TION, in Roman antiquity, a lesser triumph allowed to commanders who had obtained a bloodless victory, or defeated an inconsiderable enemy.

OVERRA'KE, in sea language, an epithet signifying that the waves break in upon a ship lying at anchor; as, the waves *overrake* her, or she is *overraked*.

O'VERT ACT, in law, a plain and open matter of fact, serving to prove a design; distinguished from a secret intention not carried into effect, and even from words spoken; such, in fact, as is to be alleged in every indictment for high treason.

O'VERTURE, in music, a prelude or introductory symphony, chiefly used to precede great musical compositions, as oratorios and operas, and intended to prepare the hearer for the piece which is to follow, often by concentrating its chief musical ideas, so as to give a sort of outline of it in instrumental music.

O'VIDUCT, in natural history, a passage which conveys the egg from the ovary.

O'VINE, pertaining to sheep.

O'VOLO, in architecture, a convex moulding, the section of which is usually the quarter of a circle, and often called the *quarter-round*.

OWL, in ornithology, a nocturnal bird of prey, of the genus *Strix*. Owls are distinguished by having a large head, very large eyes encircled by a ring of fine feathers, and a harsh screeching voice. From the enormous size of the pupils of their eyes, they are enabled to see well in the dark; but in the day, their sense of sight is imperfect; hence, during this time they keep concealed in some secure retreat. Their hearing is very acute, and their plumage soft and loose, enabling them to fly without noise, and thus to come on their prey in an unexpected manner. They breed in fissures of rocks, or in holes of trees, and feed on small birds, mice, bats, &c. There are many species; but the most common is the *barn-owl*, which frequents barns, towers, churches, old ruins, &c., generally leaving its haunts about twilight, and exploring the neighbouring woods for its prey during the night. One very curious species, called the *biscacho*, or *coquimbo*, which is found all over the Pampas of South America, is thus described by Major Head:—"Like rabbits, they live in holes, which are in groups in every direction, and which makes galloping over these plains very dangerous. These animals are never seen in the day; but as soon as the lower limb of the sun reaches the horizon, they are seen issuing from their holes in all directions, which are scattered in groups, like little villages, all over the Pampas. The biscachos, when full grown, are nearly as big as badgers, but their head resembles a rabbit's, except that they have large bushy whiskers. In the evening they sit outside their holes, and they all appear to be moralizing. They are the most serious-looking animals I ever saw; and even the young ones are grey-headed, wear mustachios, and look thoughtful and grave. In the day-time, their holes are guarded by two little owls which are never an instant away from their posts. As one gallops by these owls, they always stand looking at the stranger, and then at each other, moving their old-fashioned heads in a manner which is quite ridiculous, until one rushes by them, when fear gets the better of their dignified looks, and they both run into the biscacho's hole."

OWL'ING, so called from its being usually carried on in the night, is the offence of transporting wool or sheep out of England, contrary to the statute.

OX, in zoology, the general designation for the different species of the genus *Bos*; or more strictly, the male of the bovine genus of quadrupeds, castrated and full grown. The common ox *(bos taurus)* has a flat forehead, and round horns placed at the two extremities of a projecting line which separates the front from the occiput: the horns, however, differ so much in their form and direction in the numerous varieties, that no specific character can be based upon them. There is scarcely any part of this valuable animal that is not useful to mankind. Its flesh is the principal article of animal food; the horns are converted into combs, knife-handles, &c.; the bones form a cheap substitute for ivory; the blood is employed in the manufacture of prussian blue; the hair is used by plasterers, and the fat in the formation of candles and soap. Besides the different varieties of the common ox produced by domestication, there are several other varieties, as the Abyssinian ox, having the horns pendulous, adhering only to the skin, and the African ox, having the body snowy, and hoofs black, &c.

OX'ALATE, in chemistry, a salt formed by a combination of the oxalic acid with a base, as the *oxalate* of *ammonia*.

OXAL'IC ACID, in chemistry, an acid extracted from wood-sorrel, and also from sugar combined with potash. Numerous

OWLS HAVE BEEN COMPARED TO CATS; BOTH CATCH MICE, BOTH FEED WELL UPON FISH, AND BOTH SEE WELL IN THE DARK.

OXALIC ACID BEING VERY COMMONLY PROCURED BY THE ACTION OF NITRIC ACID ON SUGAR, IT IS OFTEN CALLED ACID OF SUGAR.

other substances, when treated by distillation, afford the oxalic acid; such as honey, gum Arabic, alcohol, the sweet matter contained in fat of oils, the acid of cherries, currants, raspberries, citrons, &c., as well as various animal substances. It forms the juice sold under the erroneous name of *salt of lemons*, which is used for taking out ink spots. Oxalic acid is a violent poison, and has in some cases been taken by mistake for Epsom salts. The immediate rejection from the stomach of this acid by an emetic, aided by copious draughts of warm water containing bicarbonate of potash, or soda, chalk, or carbonate of magnesia, are the proper remedies.

OX'ALIS, in botany, a genus of plants, class 10 *Decandria*, order 5 *Pentagynia*. The species are bulbs, and consist of the different kinds of wood-sorrel.

OX'YDE, OX'YD, OX'IDE, in chemistry, a substance combined with oxygen, without being in the state of an acid. One of the first and most ordinary changes to which metallic substances are subject, is their combination with oxygen. The process is called *oxydation*, and the new substance is an *oxyde*. Some metals are easily oxydated, as iron and tin, and they require to be defended from the action of the air in order to be preserved from *rust*, which is a true oxyde. Others, as gold and platina, scarcely change in any length of time, though ever so much exposed to the atmosphere.

OX'YGEN, or OX'YGEN GAS, in chemistry, a permanently elastic fluid, invisible, inodorous, and a little heavier than atmospheric air. It is the respirable part of air, and was called *dephlogisticated air*, or *vital air*, from its being essential to animal life; but it received its present name from its property of giving acidity to compounds in which it predominates. Oxygen is the most extensively diffused of material substances. In union with azote or nitrogen, it forms atmospheric air, of which it constitutes about a fifth-part. Water contains about 85 per cent. of it, and it exists in most vegetable and animal products, acids, salts, and oxydes. It is also the most energetic, in its chemical agencies, of all the elements of matter, and the history of its properties and combinations forms the most important subject in chemistry. Oxygen gas no where exists pure and uncombined; hence certain processes are required to obtain it in an insulated form: these consist, chiefly, in applying heat to some of its compounds, in which it is retained by a weak attraction. Its most striking property is that of exciting and supporting combustion. A candle or wax taper, freshly extinguished, is relighted on being immersed in a bottle of this gas. A partially kindled piece of charcoal, on being introduced into it, also inflames with great rapidity and brilliancy. But the most interesting combustion in this gas, is that of iron wire, or a watch-spring, which only require to have their temperature excited by the previous burning of a piece of sulphur-match attached to them at the extremity, in order to be kindled into the most vivid and intense combustion, burning with sparks and scintillations, until pieces many inches in length are consumed; and this in a jar of the gas not holding above three pints or a quart. Atmospheric air sustains life only from the oxygen it contains, and is capable of affording to the blood; but *pure* oxygen proves too highly stimulating for animal existence; and it accordingly appears that it is owing to the proportion in which it is mixed in our atmosphere, that it becomes precisely adapted to the support of life.

OX'YGON, in geometry, a triangle having three acute angles.

OX'Y-IODINE, in chemistry, a compound of the chloriodic and oxiodic acids.

OX'YMEL, a syrup made of honey and vinegar boiled together, which possesses aperient and expectorating virtues, and is used in asthmatic affections.

OXYMO'RON, a rhetorical figure, in which an epithet of a quite contrary signification is added to a word; as, *tender cruelty*.

OXYMURIAT'IC ACID, in chemistry, the name by which *chlorine* was formerly known.

OXYO'PIA, the faculty of seeing more acutely than usual. The proximate cause is a preternatural sensibility of the retina; and it has been sometimes known to precede the gutta serena.

O'YER AND TER'MINER, in law, a court by virtue of the king's commission, to hear and determine all treasons, felonies, and misdemeanours.

O YES, in law, corrupted from the French "*oyez*, hear ye;" the expression used by the crier of a court, in order to enjoin silence when any proclamation is made.

OYS'TER, in ichthyology, a well-known bivalvular edible shell-fish, belonging to the genus *ostrea*. In many places oysters are *planted*, as it is called; that is, large artificial beds are formed in favourable situations, where they are permitted to fatten and increase. They attain a size fit for the table in about a year and a half, and are in their prime at three years of age. Many curious discussions have arisen as to whether oysters possessed the faculty of locomotion. It has been generally believed that they are not endowed with any powers of changing their position; but from late observations and experiments of naturalists, however, it appears that they can move from place to place by suddenly closing their shells, and thus ejecting the water contained between them with sufficient force to throw themselves backward, or sideways.—The oysters of the British coasts have long been admitted to be the best procurable in Europe. Those found near Milton, in Kent, and usually called the "native" oysters, are perhaps the very best: they are small, round, plump, and white, with thin shells, which are easily opened. The oysters found in the river Coln, on which stands the city of Colchester, in Essex, are also of excellent quality, and are renowned over the whole island.

ALL INFLAMMABLE OR COMBUSTIBLE SUBSTANCES DERIVE THEIR POWER OF BURNING IN THE OPEN AIR FROM THEIR AFFINITY FOR OXYGEN.

The Coln forms a great many arms and creeks exceedingly well suited for the formation of oyster banks. The Dorsetshire oysters rank next in estimation to those of Essex. Those of Poole, especially, hold a high reputation, as do those also of Faversham, in Kent, of the Isle of Wight, and of Tenby, on the coast of South Wales. In London, during the proper seasons, the trade in oysters is very considerable, both for exportation into the country and native consumption. The dealers bestow great pains in preserving and feeding the oysters in tubs, containing an infusion of salt water and a little oatmeal. Besides those on the English shores, oyster-banks are common on the northern coasts of Ireland; and the Scottish capital has been, till a recent period, plentifully supplied with good oysters from the frith of Forth, in its immediate vicinity. Oysters were esteemed as a great delicacy by the Roman epicures, and were generally eaten at the beginning of the entertainment. It appears that in those days the coast of Kent was as famous for their production as at present, the Romans generally fetching them from Sandwich.—The *shell* of the oyster is composed of carbonate of lime and animal matter, and was, at one time, supposed to possess peculiar medicinal properties; but analysis has shown that the only advantage of these animal carbonates of lime over those of the mineral kingdom arises from their containing no admixture of any metallic substance.

OZÆ'NA, in medicine, an ulcer situated in the nose, discharging a fetid purulent matter, and sometimes accompanied with caries of the bones.

P.

P, the sixteenth letter and twelfth consonant of the English alphabet, is a labial articulation, formed by expressing the breath somewhat more suddenly than in emitting the sound of *b*. When *p* stands before *t* or *s*, it is mute, as in the words *psalm, psychology, ptarmigan*, &c.; and when before *h*, those two letters thus united have the sound of *f*, as in *philosophy*. As an abbreviation, in Latin words, P. stands for *Publius, pondo*, &c.; PA. DIG. for *Patricia dignitas;* P. C. for *Patres Conscripti;* P. F. for *Publii filius*, and *Publius Fabius;* P. M. for *Pontifex Maximus;* P. P. for *propositum*, or *propositum publice;* P. R. for *Populus Romanus;* PR. S. for *Prætoris sententia;* and PRS. P. for *Præses provinciæ*.——In astronomy, for *post*, as P.M. *post meridiem*, afternoon.——Among physicians, for *partes*, as P. Æ. *partes æquales*, equal parts of the ingredients; *ppt.* for *præparatus*, prepared, &c.——In law, for Parliament, as M.P. *member of parliament*.——In music, *p* stands for *piano*, or softly; *pp.* for *piu piano*, or more softly; and *ppp.* for *pianissimo*, or very softly.

PAB'ULUM, the food of plants, chiefly carbon combined with the gases, and forming salts, oils, &c.——In medicine, such parts of our common aliments as are necessary to recruit the animal fluids.——Also fuel, or that which supplies the means of combustion.

PA'CA, in zoology, a small animal of America, bearing some resemblance both to a hare and a pig. It is sometimes called the *spotted cavy*.

PACA'LIA, a feast among the Romans in honour of the goddess Pax, or Peace, who was worshipped as a deity with great solemnity, and honoured with an altar and a magnificent temple.

PACCAN', in botany, an American tree, and its nut or fruit.

PACE, the space between the two feet of a man in walking, usually reckoned two feet and a half; but the geometrical pace is five feet, or the whole space passed over by the same foot from one step to another; and 60,000 such paces make one degree of the equator.——In a general sense the word may be applied to any mode of stepping; as the *pace* of that horse is excellent; your *pace* is quicker than mine, &c.

PACHA', or PASHAW', the military governor of a Turkish province. The most distinguished of them have three horsetails carried before them; the inferior, two. Though the pacha is appointed and removed at the will of the sultan, his power is very great, and the provincial administration is in his hands. This word is also written *bashaw*.

PACHYDERMA'TA, in zoology, a large class of animals, which, according to Cuvier, comprehends all the hoofed quadrupeds that do not ruminate; as the elephant, mastedon or North American mammoth, hippopotamus, rhinoceros, tapir, and hog.

PACIF'IC, the appellation given to the ocean situated between America on the west, and Asia; so called on account of its *supposed* exemption from violent tempests.

PAC'TIO, among the Romans, was a temporary cessation from hostilities; a truce or league for a limited time. It differed from *Fœdus*, which was a perpetual league, and required one of those heralds called *Feciales*, to confirm it by solemn proclamation; neither of which conditions were necessary in the truce called *Pactio*.

PA'CO, or PACOS, in zoology, an animal of South America, resembling the camel in shape, but much smaller. It is sometimes

called the *Peruvian sheep*, on account of its long thick hair.

PAD'DOCK-PIPE, in botany, a plant of the genus *Equisetum*.

PAD'DOCK STOOL, in botany, a plant of the genus *Agaricus*; vulgarly called *toad-stool*.

PAD'ISHAH, a title assumed by the Turkish sultan. Formerly the Ottoman Porte applied that name only to the king of France, calling the other European sovereigns *koral;* but it has since been applied to other foreign princes of Europe.

PÆ'AN, among the ancients, a song of rejoicing in honour of Apollo, chiefly used on occasions of victory and triumph. Such songs were named Pæans, because the words *Io Pæan!* frequently occurred in them, which alluded to Apollo's contest with the serpent.——*Pæan*, in ancient poetry, a foot of four syllables, of which there are four kinds, the *pæan primus, secundus, &c.*

PÆDOTHY'SIA, the inhuman custom of sacrificing children, which prevailed among the heathens.

PÆ'ONY *(pæonia)*, in botany, a genus of plants belonging to the natural family *ranunculaceæ*, distinguished for the size and magnificence of the flowers. The species are mostly herbaceous, having perennial, tuberose roots, and large leaves. The flowers are solitary, and of a crimson, purplish, or sometimes white colour. The ancients attributed many wonderful properties to this plant, but it has long since lost all such reputation.——The tree-pæony (called by the Chinese *mou-tan*) is cultivated in that country with great care, and many varieties of it are produced, of all colours.

PAGANA'LIA, in antiquity, certain festivals observed by the Romans in the month of January. They were instituted by Servius Tullius, who appointed a certain number of villages *(pagi)*, in each of which an altar was to be raised for annual sacrifices to their tutelar gods, at which all the inhabitants were to assist, and give presents in money according to their sex and age, by which means the number of country-people was known.

PA'GANISM, the religion of the heathen world, in which the Deity is represented under various forms, and by all kinds of images or idols; it is therefore called idolatry or image worship. The theology of the pagans was of three sorts, fabulous, natural, and political or civil. The first treats of the genealogy, worship, and attributes of their deities, who were for the most part the offspring of the imagination of poets, painters, and statuaries. The natural theology of the pagans was studied and taught by the philosophers, who rejected the multiplicity of gods introduced by the poets, and brought their theology to a more rational form. The political or civil theology of the pagans was instituted by legislators, statesmen, and politicians to keep the people in subjection to the civil power. This chiefly related to their temples, altars, sacrifices, and rites of worship.——The word *pagan* was originally applied to the inhabitants of the country, who on the first propagation of the Christian religion adhered to the worship of false gods, or who refused to receive Christianity after it had been received by the inhabitants of the cities. In the middle ages, this name was given to all who were not Jews or Christians, theirs being considered the only true religion; but in more modern times, Mohammedans, who worship the one supreme God of the Jews and Christians, are not called *pagans*. We also find in some religions of paganism (for example, with Zoroaster, Plato, and Socrates) pure and elevated notions, and precepts of morality which would not disgrace even those of Christianity.

PAGE, a sort of servant of honour. The pages in the royal household are various, and have various offices assigned them; as pages of honour, pages of the presence-chamber, and pages of the back-stairs.

PAGO'DA, a Hindoo place of worship, divided, like our churches, into an open space, a place for worship, and an interior or chancel. The most remarkable pagodas are those of Benares, Siam, Pegu, and particularly that of Juggernaut, in Orissa. In the interior of these buildings, besides altars and statues of the gods, there are many curiosities. The statues, which are likewise called *pagodas*, and which are often numerous, are usually rude images of baked earth, richly gilt, but without any kind of expression.——Pagoda is also the name of a gold or silver coin current in Hindostan, of different values in different parts of India, from 8*s.* to 9*s.* sterling.

PA'GODITE, a name given to the mineral of which the Chinese make their pagodas. It is called also *lardite, koreite*, and *agalmatolite*.

PAIN, an uneasy sensation in animal bodies, arising from some accident in the nerves, membranes, muscles, vessels, &c. of the body. Thus violent pressure or stretching of a limb gives pain; inflammation produces pain; wounds, bruises, and incisions give pain. It may be said, indeed, that all pain proceeds from some injury done to the parts affected; and, according to Galen, it proceeds either from a sudden alteration of the part, or a new temperament suddenly induced.——*Mental pain* may also arise from numerous causes: disquietude, anxiety, apprehension for the future, grief or sorrow for the past, &c. may each give mental pain, as all who have passed through the fiery ordeals of life by sad experience know.

PAINS AND PENALTIES, in law, an act of parliament to inflict pains and penalties beyond or contrary to the common law, in the particular cases of great public offenders.

PAINTING, the art of representing objects in nature, or scenes in human life, with fidelity and passion. It was coeval with civilization, and practised, with success by the Greeks and Romans; obscured for many centuries, but revived in Italy in the 15th century, where it produced the Roman, Venetian, and Tuscan schools; afterwards, the German, Dutch, Flemish, French, and Spanish schools; and, finally,

IN CONDENSED AIR THE ELECTRIC SPARK IS BRIGHT AND WHITE; IN RARIFIED AIR IT IS PAINT AND OF A REDDISH TINGE.

THE BARK OF TREES, LIKE CLOTHING, PREVENTS THE TEMPERATURE NECESSARY TO VEGETABLE LIFE FROM TOO RAPIDLY ESCAPING.

the English school, which equals, and bids fair to transcend them all, in correctness of drawing, effect of colouring, and taste of design. It is distinguished into historical painting, portrait painting, landscape painting, animal painting, marine painting, &c.; and as regards the form and the materials, into painting in oil, water colours, fresco, miniature, distemper, mosaic, &c.——Historical painting is the noblest and most comprehensive of all branches of the art; for in that the painter vies with the poet, embodying ideas, and representing them to the spectator. He must have technical skill, a practised eye and hand, and must understand how to group his skilfully executed parts so as to produce a beautiful composition; and all this is insufficient without a poetic spirit which can form a striking conception of an historical event, or create imaginary scenes of beauty. The following rules of criticism in painting have been laid down:—1. The subject must be well imagined, and, if possible, improved in the painter's hands; he must think well as an historian, poet, or philosopher; and more especially as a painter, in making a wise use of all the advantages of his art, and in finding expedients to supply its defects. 2. The expression must be proper to the subject, and the characters of the persons; it must be strong, so that the dumb-show may be perfectly and readily understood; every part of the picture must contribute to this end; colours, animals, draperies, and especially the attitudes of the figures. 3. There must be one principal light, and this and all the subordinate ones, with the shadows and reposes, must make one entire and harmonious mass; while the several parts must be well connected and contrasted, so as to make the whole as grateful to the eye as a good piece of music to the ear. 4. The drawing must be just; nothing must be out of place, or ill-proportioned; and the proportions should vary according to the characters of the persons drawn. 5. The colouring, whether gay or solid, must be natural, and such as delights the eye, in shadows as well as in lights and middle tints; and the colours, whether they are laid on thick, or finely wrought, must appear to have been applied by a light and accurate hand. 6. Nature must be the obvious foundation of the piece; but nature must be raised and improved, not only from what is commonly seen to what is rarely met with, but even yet higher, from a judicious and beautiful idea in the painter's mind.

PAIR, two things of a kind, similar in form, applied to the same purpose, and suited to each other or used together, as, a pair of gloves; or two similar parts that compose one whole, or a set of things joined to make another complete, &c.——*Pair*, in anatomy, an assemblage, or conjugation of two nerves, which have their origin together in the brain, or spinal marrow, and thence are distributed into the several parts of the body, the one on one side, and the other on the other side.

PAL'ACE, a magnificent house in which a sovereign or other distinguished person resides; as a royal palace; a pontifical palace; a ducal palace.

PAL'ACE-COURT, a court in England which administers justice between the domestic servants of the crown. It is held once a week before the steward of the household and knight-marshal; its jurisdiction extending twelve miles in circuit from the royal palace.

PAL'ADIN, a name formerly given to the knights-errant, who travelled from place to place to give proofs of their valour and their gallantry; extolling their own mistresses as unrivalled in beauty, and compelling those who refused to acknowledge the truth of their panegyrics to engage with them in mortal combat. Of this kind the most famous were Amadis of Gaul and the brave Roland or Orlando.

PALANQUIN', or PALANKEE'N, a sort of litter or covered carriage, used in the East Indies, and borne on the shoulders of four porters, called *coolies*, eight of whom are attached to it, and who relieve each other. They are usually provided with a bed and cushions, and a curtain, which can be dropped when the occupant is disposed to sleep. The motion is easy, and the travelling, in this way, is safe and rapid.

PALÆSTRA, in Grecian antiquity, a public building, where the youth exercised themselves in wrestling, running, playing at quoits, &c. Some say the *palæstra* consisted both of a college and an academy, the one for exercises of the mind, the other for those of the body; but most authors describe the palæstra as a mere academy for bodily exercises.

PALÆOG'RAPHY, a description of ancient writings, inscriptions, characters, &c.

PALA'RIA, in antiquity, an exercise performed by the Roman soldiers, to improve them in all their necessary manœuvres.

PAL'ATE, in anatomy, the roof or upper and inner part of the mouth. The glands in this part of the mouth secrete a mucous fluid, which lubricates the mouth and throat and facilitates deglutition.——*Ossa palati*, are two bones situated in the posterior part of the arch of the palate, between the pterygoide apophysis, and the ossa maxillaria, and running up on the sides of the nasal fossæ all the way to the bottom of each orbit. Their uses are first to form the palate, the orbit, and the maxillary sinus; secondly, to sustain the membrane of the palate, and uvula: and thirdly, to assist in the modulation of the voice.

PAL'ATINE, an epithet applied originally to persons holding an office or employment in the palace of the sovereign; hence it imports—possessing royal privileges, as the counties *palatine* of Lancaster, Chester, and Durham, which have particular jurisdictions.——On the continent a *palatine*, or *count palatine*, is a person delegated by a prince to hold courts of justice in a province, or one who has a palace and a court of justice in his own house. All the princes of the German empire were originally ser-

vants of the imperial crown. In course of time they acquired independent authority, and secured that authority to their heirs: among these was the count-palatine, or of the palace, in the German language denominated the *pfalzgraf*. This officer was a president who decided upon appeals made to the emperor himself, from the judgment of provincial courts. All titles, except that of lord, which is complimentary, and belonged to territory, were originally official, as are those of judge, general, &c. at this day. When Charlemagne had extended the German empire, he sent persons to administer government in the provinces, under the title of dukes; officers, probably, whose duty was partly military, whence their denomination, which is synonymous with that of leaders, or generals; under the dukes, justice was distributed in each district of the province by a *comes*, count or earl, called in the German *graf*, and in the Saxon and English, *gerefa*, *greve*, *rere*, or *sheriff*; from these courts lay the appeals already mentioned.

PALE, a little pointed stake or piece of wood, used in fencing, inclosing, &c.—— The *pale* was an instrument of punishment and execution among the ancient Romans, and still continues so among the Turks. Hence, *empaling*, the passing a sharp pale or stake upwards through the body.—— *Pale*, in heraldry, one of the honourable ordinaries of an escutcheon; being the representation of a pale or stake placed upright.

PALEA'CEOUS, in botany, an epithet for chaffy, or resembling chaff; as, a paleaceous pappus.

PALEOL'OGY, a discourse or treatise on antiquities, or the knowledge of ancient things.

PALISA'DES or PALISA'DOES, in fortification, an enclosure of stakes, or posts sharpened and set firmly in the ground, used to fortify the avenues of open forts, &c. They were sometimes so ordered that they would turn up and down as occasion required, and might be hidden from the view of the enemy until he came to the attack.

PAL'INDROME, in composition, a verse or line which reads the same either forwards or backwards; *e. g.* that which is put in the mouth of Satan—*Signa te, signa, temere me tangis et angis* (cross thyself, cross thyself, you touch and torment me in vain); or, *Roma tibi subito motibus ibit amor.*

PALINGEN'ESY, a term used by entomologists to designate the transitions from one state into another, observed with insects, and in each of which the insect appears in a totally different form. It is Greek for *regeneration.*

PAL'INODE, or PAL'INODY, a recantation, particularly a poetical one, of any thing dishonourable or false uttered against another person.

PALISSE', in heraldry, a bearing like a range of palisades before a fortification, represented on a fesse, rising up a considerable height, and pointed at the top, with the field appearing between them.

PALL, in heraldry, a kind of cross representing the *pallium*, or archiepiscopal ornament sent from Rome to the metropolitan bishops.

PAL'LA, in antiquity, a long kind of mantle or upper garment worn by the Roman females, part of which was thrown over the left shoulder, and held fast under the arm. Tragic actors also wore the *palla.*

PALLA'DIUM, a Trojan statue of the goddess Pallas, which represented her as sitting with a spear in her right hand, and in her left a distaff or spindle. On this statue the fate of the city was supposed to depend; for while they retained this sacred image, it had been given out it was believed Troy would be invincible. Hence anything that affords effectual protection and security is by us deemed a *palladium*; as, the trial by jury is the palladium of our civil rights.—— *Palladium*, in mineralogy, a metal found in very small grains, of a steel gray colour and fibrous structure, associated with platina ore or found in auriferous sand. It is infusible by ordinary heat, and when native is alloyed with a little platina and iridium. It is ductile and very malleable; in hardness superior to wrought iron, and possessed of a specific gravity of 11·8. On exposure to a strong heat, its surface undergoes a tarnish, and becomes blue; but if touched, while hot, with a small piece of sulphur, it runs like zinc.

PAL'LET, among painters, a little oval tablet of wood or ivory, on which a painter places the several colours he has occasion to use. The middle serves to mix the colours on, and to make the tints required. It is held by putting the thumb through a hole made at one end of it.——Among potters, crucible makers, &c. a wooden instrument for forming, heating, and rounding their works.——Among gilders, a tool for taking up the gold leaf from the cushion, and to apply and extend them.——Among mariners, a partition in a hold.——In heraldry, the diminutive of the *pale*, being one half of its breadth.

PAL'LETS, in mechanics, levers in clocks and watches, connected with the pendulum or balance, which receive the immediate impulse of the wheel.

PAL'LIUM, an upper garment or mantle worn by the Greeks, as the *toga* was by the Romans. Each of these was so peculiar to the respective nations, that *Palliatus* is used to signify a Greek, and *Togatus* a Roman.——*Pallium*, or *Pall*, also the woollen mantle which the Roman emperors were accustomed, from the fourth century, to send to the patriarchs and primates of the empire, and which was worn as a mark of ecclesiastical dignity. Since the 12th century it has consisted of a white woollen band or fillet, which is thrown over the shoulders outside of the sacerdotal vestments; one band hanging over the back, and another over the breast, and both ornamented with a red chaplet.

PALL-MALL, or PALLE MAILLE, an

THE PRICE OF PALLADIUM IS ABOUT SIX TIMES THAT OF GOLD; IF IT WERE MORE COMMON IT MIGHT BE USED IN VARIOUS KINDS OF JEWELLERY.

THE CONTACT OF AIR, HOWEVER, CONSIDERABLY PROMOTES THEIR ACTION.

ancient game, in which an iron ball was struck with a mallet through a ring or arch of iron. It was formerly practised in St. James's Park, and gave its name to the street called Pall-Mall, (pronounced Pell-Mell).

PALM, in botany, the name of many species of plants, but particularly of the date-tree or great palm, a native of Asia and Africa. The *palms* are the pride of tropical climates, and contribute greatly to give a peculiar and imposing character to the vegetation of those regions. Their straight and lofty branching trunks, crowned at the summit by a tuft of large radiating leaves or fronds, gives them an aspect entirely unique, and far surpassing that of other trees in majesty. They belong to the monocotyledonous division of plants, and have their parts arranged in threes, or one of the multiples of that number. The calyx has six divisions; the stamens are six in number; and the fruit consists of a berry or drupe, composed of a substance sometimes hard and scaly, but more often fleshy, or fibrous, surrounding a one-seeded nut. Though sometimes growing to a very great height, in other species the stem rises only a few inches above the surface of the ground. Among the most useful of the palms may be mentioned the cocoa-nut, the sago, and the date, the last of which sometimes grows to the height of 100 feet.——In Congo the natives are very expert in making wine of the juice of the palm. At certain times of the year they ascend the trees by the help of a hoop, and when they perceive a flower blown, they cut it off with a knife and fasten the point of the cut stalk into a calabash, called a *capasso*. It remains suspended in that way for a short time, and on being taken down is found full of a liquor as white as whey, which is fermented, and drunk in three days. The fermented juice of the palmira tree also forms the wine of India. In many parts this tree grows spontaneously; in others it is cultivated with great care. When planted in a fertile soil, and of 30 years' growth, it yields *callu* or palm-wine. Previous to the bursting of the membrane which covers the flowering branch, called by botanists the spatha, or spadix, the workman mounts the tree by means of a strap passed round his back, and a rope round his feet, and bruises the part between two flat pieces of stick; this is done for three successive mornings, and on each of the four following, he cuts a thin slice from the top to prevent the spatha from bursting. On the eighth morning a clear sweet liquor begins to flow from the wound, which is then collected. But this exudation, if continued for three years, will kill the trees. ——*Palm*, an ancient long measure, taken from the extent of the hand. The *great palm*, or length of the hand, was equal to about eight inches and a half; the *small palm*, or breadth of the hand, about three inches. The *modern palm* is different in different places.——*Palm*, the broad triangular part of an anchor at the end of the arms.

PAL'MÆ, the 25th class of the Linnæan system of plants, consisting of trees and shrubs, with a stem, bearing leaves at the top, being the most magnificent specimens of the vegetable kingdom.

PAL'MATED, something resembling the shape of the hand: thus, in botany, we say *palmated* leaves, roots, stones, &c.

PALM'ER, a pilgrim bearing a staff; or one who returned from the Holy Land, bearing branches of palm: he was distinguished from other pilgrims by his profession of poverty, and living on alms as he travelled.

PALMET'TO, or CABBAGE-TREE, in botany, a species of palm growing in the southern states of America, and attaining the height of forty or fifty feet. The summit of the stem is crowned with a tuft of large palmated leaves, varying in length and breadth from one to five feet, and supported on long foot-stalks, which give it a beautiful and majestic appearance. Before these leaves are developed, they are folded like a fan; at their base and in the centre of the stem are three or four ounces of a white, compact, and tender substance, which is eaten with oil and vinegar, and somewhat resembles the cabbage in taste, but is neither highly nutritious nor particularly agreeable, and, moreover, is attended with the death of the tree. The wood, though extremely porous, has been found peculiarly suitable for the construction of forts, as it closes, without splitting, on the passage of a ball.

PAL'MIPEDES, in ornithology, web-footed birds.

PALM'ISTRY, a mode of telling fortunes by the lines of the hand; a trick of imposture much practised by gypsies.

PALM-OIL TREE, a tree of South America, from the kernels of whose fruit a rich oil is obtained.

PALM SUN'DAY, the sixth Sunday in Lent, the next before Easter, commemorative of our Saviour's triumphal entrance into Jerusalem, when palm branches were strewed in the way.

PALM'-WORM, in entomology, an insect in America, about twelve inches long, and extremely swift in its motion, having an incredible number of feet, and two claws at the head and tail, with which it wounds and poisons persons, though not fatally.

PAL'SY, or PARAL'YSIS, in medicine, a nervous disease, known by the loss or defect of the power of voluntary muscular motion in the whole body, or in a particular part. It appears under different forms: it may be a loss of the power of motion without a loss of sensation, or a loss of sensation without loss of motion, or a loss of both. Sometimes it attacks the whole system; at others, it affects one side of the body, when it is called *hemiplegia;* and at other times a single member only is affected. A paralysis of the vital organs is attended with immediate death.

PA'LY, or *paleways*, in heraldry, is when the shield is divided into four or more equal parts, by perpendicular lines from top to bottom.

PAM'PEROS, violent winds so called, which come from the west or south-west, and, sweeping over those vast plains, or *pampas*, in the southern parts of Buenos Ayres, often do much injury on the coasts.

PANA'DA, or PANA'DO, a diet consisting of bread boiled in water to the consistence of pulp and sweetened

PANATHENÆ'A, in Grecian antiquity, an ancient Athenian festival, in honour of Minerva, who was the protectress of Athens, and called *Athena*. There were two solemnities of this name, one of which was called the *greater panathenæa*, and celebrated once in five years. These were distinguished from the *less* (which were celebrated every third year) not only by their greater splendour and longer continuance, but particularly by the solemn procession, in which the *peplus*, a sacred garment, consecrated by young virgins, and made of white wool, embroidered with gold, was carried from the Acropolis into the temple of the goddess, whose ivory statue was covered with it. This festival was so holy, that criminals were released from the prisons on the occasion of its celebration, and men of distinguished merit were rewarded with gold crowns.

PANCRA'TIUM, among the ancients, a kind of exercise, which consisted of wrestling and boxing. In these contests it was customary for the weaker party, when he found himself pressed by his adversary, to fall down, and fight rolling on the ground.

PAN'CREAS, in anatomy, a flat glandular viscus of the abdomen; in animals called the *sweetbread*. It secretes a kind of saliva, and pours it into the duodenum.

PAN'DECTS, the name of a volume of the civil law, digested by order of the emperor Justinian.

PAN'DIT, or PUN'DIT, a learned Brahmin; or one versed in the Sanscrit language, and in the sciences, laws, and religion of the country.

PAN'EL, in law, a schedule or roll of parchment on which are written the names of the jurors returned by the sheriff. *Impanelling* a jury, is returning their names in such schedule.——*Panel*, in joinery, a square of thin wood, framed or grooved in a large piece between two upright pieces and two cross pieces, as the *panel* of a door.

PAN'IC, an ill-grounded terror inspired by the misapprehension of danger. The origin of the word is said to be derived from Pan, one of the captains of Bacchus, who with a few men routed a numerous army, by a noise which his soldiers raised in a rocky valley favoured with a great number of echoes. Hence all ill-grounded fears have been called *panic* fears.

PAN'ICLE, in botany, a sort of inflorescence, in which the flowers and fruits are scattered on peduncles variously subdivided, as in oats, and some of the grasses.

PAN'ICUM, in botany, a genus of plants, class 3 *Triandria*, or 2 *Digynia*. The species are annuals, and consist of various kinds of panic-grass.

PAN'NAGE, in law, the feeding of swine upon *mast* in woods; also the money paid for the license of having pannage.

PANNIC'ULUS CARNO'SUS, in comparative anatomy, a robust fleshy tunic, situated in beasts between the tunic and the fat; by means of which they can move their skin in whole or part: it is altogether wanting in the human frame.

PANORA'MA, a circular picture on a very large scale, fixed around a room particularly constructed for the purpose, so that from the centre a spectator may have a complete view of the objects represented. This very ingenious and beautiful contrivance was invented, in 1787, by Mr. Robert Barker, an Englishman, and may be considered as the triumph of perspective. The artist, from a high point, must take an accurate plan of the whole surrounding country, as far as the eye can reach. Truth of representation and closeness of imitation are the great objects to be aimed at in panoramas, and the delusion must be promoted by the manner in which the light is admitted. The *diorama* was invented in France, and differs from the panorama chiefly in being flat instead of circular, and therefore presenting only a particular view, like any other painting, in front of you, and not all around. [See DIORAMA.]

PANTALOON', a species of close long trowsers extending to the heels, said to have been introduced by the Venetians. It has been remarked that the Irish very anciently wore trowsers of this description; and that Louis XIII. is the first who appears with what we now call *breeches*.——A buffoon in pantomimes.

PANTHE'A, in antiquity, statues composed of the figures or symbols of several divinities.

PAN'THEISM, a philosophical species of idolatry which maintains that the universe is the supreme God.—Some persons, however, have also applied the word *pantheism* to that doctrine of theology according to which God's spirit not only pervades every thing, but every thing lives through him and in him, and there is nothing without him (*Acts* xvii. 27 et seq.; *Ephes.* iv. 6).

PANTHE'ON, in Roman antiquity, a temple of a circular form, dedicated to all the heathen deities. It was built on the *Campus Martius*, by Agrippa, son-in-law to Augustus; but is now converted into a church and dedicated to the Virgin Mary and all the martyrs. It is, however, called the *rotunda*, on account of its form, and is one of the finest edifices in Rome. The well-preserved portico seems to be of a later period than the temple itself; it consists of sixteen columns of oriental granite, each of which is 15 feet in circumference. The interior was formerly adorned with the most beautiful statues of the various deities, but they were removed by Constantine to Constantinople; at present there are in the eight niches, eight fine columns, placed there by the emperor Adrian. What is very remarkable, and shows the alteration which has taken place at Rome, is, that the entrance is now twelve steps below, though

RUINS OF A MAGNIFICENT PANTHEON, WHICH ADRIAN CAUSED TO BE BUILT AT ATHENS, ARE STILL EXTANT: IT WAS SUPPORTED BY 120 COLUMNS.

heretofore it was twelve steps above the surface of the ground.

PAN'THER *(felis pardus)*, in zoology, a fierce, ferocious quadruped, of the size of a large dog, with short hair, of a yellowish colour, diversified with roundish black spots. It is a native of Africa, and has the general habits of the leopard.

PAN'TOGRAPH, a mathematical instrument so formed as to copy any sort of drawing or design.

PANTOM'ETER, an instrument used to take all sorts of angles, distances, and elevations.

PAN'TOMIME, in the modern drama, a mimic representation by gestures, actions, and various kinds of tricks performed by Harlequin and Columbine as the hero and heroine, assisted by Pantaloon and his clown.——*Pantomimes*, among the ancients, were persons who could imitate all kinds of actions and characters by signs and gestures. Scaliger supposes they were first introduced upon the stage to succeed the chorus and comedies, and divert the audience with apish postures and antic dances. In after times their interludes became distinct entertainments, and were separately exhibited.

PAPAW' *(carica papaya)*, a tree growing in warm climates to the height of 18 or 20 feet, with a soft herbaceous stem, naked nearly to the top, where the leaves issue on every side on long foot-stalks. Between the leaves grow the flower and the fruit, which is of the size of a melon. The juice is acrid and milky, but the fruit when boiled is eaten with meat, like other vegetables; yet, when cultivated in our green-houses, the fruit is entirely worthless.

PA'PER, a substance formed into thin sheets, on which letters and figures are written or printed. It received its name from the *papyrus*, the leaves of which plant originally served the Egyptians and certain other nations for writing on. Chinese paper is of various kinds, as of the rinds or barks of trees, especially of the mulberry, the elm, the bamboo, and the cotton-tree. Cotton is also used by us to an immense extent in the manufacture of paper; but that which is made from linen is by far the best and most durable. Paper is distinguished as to its use into writing paper, drawing paper, cartridge paper, copy, chancery, &c.; as to its size into foolscap, post, crown, demy, medium, royal, imperial, &c. Paper is made either by hand or by machinery; and perhaps none of the useful arts have received more attention in order to bring them to perfection than the paper manufacture. In respect to whiteness, fineness, and firmness, the paper made in England excels all other; though the French manufacture some of a very fine quality, while the Italians and Germans are noted more for the durability of their paper, than for its fineness.——*Improved method of making Paper by the aid of machinery:* "Nothing," says Dr. Ure, "places in a more striking light the vast improvement which has taken place in all the mechanical arts of England since the era of Arkwright, than the condition of our paper-machine factories now, compared with those on the continent. Almost every good automatic paper mechanism at present mounted in France, Germany, Belgium, Italy, Russia, Sweden, and the United States, has either been made in Great Britain, and exported to these countries, or has been constructed in them closely upon the English models." It is not a part of the plan of this work to enter into the minutiæ of detail in machinery or manufactures. Generally speaking, as in this case, they would occupy infinitely too great a portion of our space; but it would be remiss in us not to allude to some of the remarkable features which the inimitable paper-making machinery of this country presents, as well as to state its origin. In 1799, Louis Robert, then employed in the paper works of Essonne in France, contrived a machine to make paper of great size, by a continuous motion, and obtained for it a patent for 15 years, with a sum of 8000 francs from the French government, as a reward for his ingenuity. This invention was purchased by M. Didot, who came over with it to England, where he entered into several contracts for constructing and working it; and it eventually came into the possession of the Messrs. Fourdrinier, extensive paper makers and stationers, who, with the assistance of Mr. Donkin, a young and zealous mechanist, made wonderful improvements on the French invention, and in 1803 produced a self-acting cylindrical machine, with rotatory motion, for making an endless web of paper! Many and various have been the improvements introduced, since that period, by the aid of most ingenious and complicated machinery, resulting chiefly from the skill and enterprise of Mr. John Dickinson; till at length the art has so completely triumphed over every difficulty, that a continuous stream of fluid pulp is now passed round the cylinders with unerring precision, and not only made into paper, but actually dried, pressed smooth, and every separate sheet cut round the edges, in the brief space of five minutes.

PA'PER-MONEY, or PA'PER-CUR'RENCY, bank notes or bills issued by the credit of government, and circulated as the representative of coin. In a more extensive sense, these terms may denote all kinds of notes and bills of exchange.

PA'PIER LINGE (*French*), a kind of paper made to resemble damask and other linen so cleverly, that it is impossible, without examination, to detect the difference; and even to the touch, the articles made from the *papier linge* are very much like linen, and can be used for every purpose to which linen is applicable, with the exception, of course, of those in which strength and durability are required.

PA'PIER MACHE' (*French*), the composition of which superior tea-trays, snuff boxes, and many other light and elegant articles, as well as a variety of toys, &c. are manufactured. They are made of cuttings of white or brown paper, boiled in water,

and beaten in a mortar till they are reduced to a kind of paste, and then boiled with a solution of gum arabic, or of size, to give consistency to the paste, which is afterwards formed into different shapes, by pressing it into oiled moulds. When dry, it is coated with a mixture of size and lamp-black, and afterwards varnished.

PAPIL'IO, in entomology, the name of a subdivision of the insect class, when in their *imago*, or third state; that is, when they have wings. Every fly is an *imago;* but a moth is called *phalæna*, and a butterfly *papilio*. The most natural and approved distinguishing names for the several species of insects (which are called the *trivial* names), are taken from the vegetables on which they feed: but in the multitude of *butterflies* the proportion that belong to extra-European parts of the world is so great, and their several foods so little known, that Linnæus was obliged to adopt a different scheme of nomenclature; and he accordingly divided them into sections by the names *equites*, *heliconii*, *danai*, *nymphales*, and *plebii*. The individuals of the section of *equites* have their names from the Trojan history; those of that of the *heliconii* from the Muses; the *danai* from the children of Danaus; the *nymphales* from the nymphs of antiquity; and the *plebii* from the celebrated ancients. In describing the *papilio* it will be necessary to confine ourselves to the first division of the Linnæan genus, viz. the *equites*. One of the most remarkable and interesting circumstances connected with this beautiful class is their series of transformations before reaching a perfect state. The female butterfly lays a great quantity of eggs, which produce caterpillars: these, after a short life, assume a new form, and become chrysalides—"the tomb of the caterpillar and the cradle of the butterfly." These chrysalides, or insect prisons, are attached in various ways, and are of different forms; but within the cell or covering, of whatever it may be composed, the disgusting caterpillar becomes the brilliant butterfly. A single female insect, in its perfect state, produces several hundred eggs, but their over increase is checked by a host of enemies. A single pair of sparrows, it is calculated, will destroy upwards of 3000 caterpillars in a week; and great numbers are also killed by a species of fly, which deposits its eggs in the caterpillar, where they hatch, and the larvæ feed on the body that protected them.

PAPIL'LÆ, the nipple of the breast, and terminations of the nerves in that form which constitutes the sense of feeling in the true skin, and of taste.

PAPILIONA'CEÆ, the 32d Linnæan natural order of plants, with flowers resembling the butterfly's wings, as the pea, &c.

PAPILIONA'CEOUS, in botany, an epithet for the corolla of plants which have the shape of a butterfly, such as that of the pea. The papilionaceous corolla is usually four-petaled, having an upper spreading petal, called the *banner*, two side petals called *wings*, and a lower petal called the *keel*.

PAPILLA'RUM PROCES'SUS, in anatomy, the extremities of the olfactory nerves, which convey the slimy humours by the fibres that pass through the *os cribriforme*.

PAP'ILLARY, or PAP'ILLOUS, pertaining to or resembling a nipple.——*Papillose*, in botany, covered with fleshy dots or points, or with soft tubercles, as the ice-plant.

PA'PIST, one that adheres to the doctrines and ceremonies of the church of Rome; a Roman catholic. Hence *papistry*, *papistical*, &c.

PAPPOOS', the name given to a young child by the natives of New England.

PAR VA'GUM, in anatomy, the eighth pair of nerves.

PAP'PUS, in botany, *thistle-down*, a sort of feathery or hairy crown with which many seeds are furnished for the purpose of dissemination. A seed surmounted by a pappus resembles a shuttle-cock, so that it is naturally formed for flying, and for being transported by the wind to a very considerable distance from its parent plant. By this contrivance of nature the dandelion, groundsel, &c. are disseminated and self-sown in places where they would otherwise have never existed.

PAP'ULÆ, in medicine, little blisters, pimples, or eruptions on the skin.

PAP'ULOSE, in botany, an epithet for a leaf, &c. covered with vesicular points or with little blisters.

PAPYROG'RAPHY, a lately-invented art, which consists of taking impressions from a kind of pasteboard covered with a calcareous substance (called lithographic paper), in the same manner as stones are used in the process of lithography.

PAPY'RUS (*cyperus papyrus* of Linnæus), an Egyptian sedge-like plant, or reed grass, which has acquired an immortal fame in consequence of its leaves having furnished the ancients with paper. It grows in the marshes of Egypt or in the stagnant places of the Nile. Its roots are tortuous, and in thickness about four or five inches; its stem, which is triangular and tapering, rises to the height of ten feet, and is terminated by a compound, wide spreading, and beautiful umbel, which is surrounded with an involucre composed of eight large sword-shaped leaves. The uses of the papyrus were, however, by no means confined to the making of paper. The inhabitants of the countries where it grows, even to this day, manufacture it into sail-cloth, cordage, and sometimes wearing apparel. Boats are made by weaving the stems compactly together, and covering them externally with a resinous substance to prevent the admission of water.

PAR (Latin, *equal*), in commerce, is said of any two things equal in value; and in money-affairs, the equality of one kind of money or property with another: thus, when 100*l.* stock is worth exactly 100*l.* specie, the stock is said to be *at par;* that is, the purchaser is required to give neither more nor less of the commodity with which he parts, than he receives of that which he acquires: thus, too, the *par* of exchange is the equal value of money in one country and another.

In the exchange of money with foreign countries, the person to whom a bill is payable is supposed to receive the same value as was paid to the drawer by the remitter; but this is not always the case with respect to the intrinsic value of the coins of different countries, which is owing to the fluctuation in the prices of exchange among the several countries and great trading cities. In fine, bills of exchange, stocks, &c. are *at par* when they sell for their nominal value; *above par* when they sell for more; and *below par* when they sell for less.

PA'RA, a Turkish coin, very small and thin, of copper and silver, the fortieth part of a Turkish piaster.

PAR'ABLE, a fable or allegorical representation of something real or apparent in life or nature, from which a moral is drawn for instruction. Parables are certainly a most delicate way of impressing disagreeable truths on the mind, and in many cases have the advantage of a more open reproof, and even of formal lessons of morality: thus Nathan made David sensible of his guilt by a parable; and thus our Saviour, in compliance with the customs of the Jews, who had a kind of natural genius for this sort of instruction, spoke frequently in parables, most beautifully constructed, and calculated to convince them of their errors and prejudices.

PARAB'OLA, in conic sections, a curve produced by cutting a cone parallel to one of its sides, and having at such section certain fixed proportions; when the same proportions govern bodies in motion, they are said to describe a parabola, and this is theoretically the case with projectiles from the earth.——*Parabolic Asymptote*, a parabolic line approaching to a curve, so that they never meet; yet, by producing both indefinitely, their distance from each other becomes less than any given line.——*Paraboliform*, having the form of a parabola.

PARAB'OLE, in oratory, similitude; comparison. Hence, *parabolical* instruction or description.

PARAB'OLISM, in algebra, the division of the terms of an equation by a known quantity that is involved or multiplied in the first term.

PARAB'OLOID, in geometry, a paraboliform curve whose ordinates are supposed to be in the subtriplicate, subquadruplicate, &c. ratio of their respective abscissæ. Another species is when the parameter, multiplied into the square of the abscissæ, is equal to the cube of the ordinate: the curve is then called a semi-cubical paraboloid.

PARACEL'SIAN, a name given to a physician who follows the practice of Paracelsus, a celebrated Swiss physician and alchymist who lived at the close of the 15th century, and who performed many extraordinary cures by means totally unknown to the generality of medical practitioners of his time.

PARACEN'TRIC MO'TION, in astronomy, denotes so much as a revolving planet approaches nearer to, or recedes from, the sun or centre of attraction.

PARACH'RONISM, an error in chronology, by which an event is related as having happened later than its true date.

PAR'ACHUTE, in aerostation, a machine or instrument in the form of a large umbrella, calculated to break the fall of a person in descending from an air-balloon.

PAR'ACLETE, the *Comforter*, a term applied in the sacred volume to the Holy Spirit.

PAR'ADIGM, in grammar, an example of a verb conjugated in the several moods, tenses, and persons.

PAR'ADISE, a region of supreme felicity; generally meaning the garden of Eden, in which Adam and Eve were placed immediately after their creation. The locality of this happy spot has been assigned, by different writers, to places the most opposite. In truth, there is scarcely any part of the world where Paradise has not been sought for. The most probable opinion is, that it was situated between the confluence of Euphrates and Tigris, and their separation; Pison being a branch arising from one of them after their separation,—and Gihon, another branch arising from the other on the western side. Arabia Deserta was the Ethiopia mentioned by Moses as washed by these rivers; and Chusistan, in Persia, answers to the land of Havilah, where there was gold, bdellium, the onyx-stone, &c.—— When Christians use the word, they mean that celestial paradise, or place of pure and refined delight in which the souls of the blessed enjoy everlasting happiness. In this sense it is frequently used in the New Testament: our Saviour tells the penitent thief on the cross, "This day shalt thou be with me in paradise;" and St. Paul, speaking of himself in the third person, says, "I knew a man who was caught up into paradise, and heard unspeakable words, which it is not lawful for a man to utter."

PARADIS'EA, or BIRDS OF PARADISE, in ornithology, a genus of birds belonging to the order *Picæ*. The beak is covered with a belt or collar of downy feathers at the base, and the feathers on the sides are very long; their whole plumage being singular and splendid. They occur in China, Japan, Persia, and various parts of India, but are supposed to be originally natives of New Guinea. The tail consists of ten feathers; the two middle ones, and sometimes more in several of the species, are very long, and webbed only at the base and tips. The legs and feet are very large and strong; they have three toes forward, one backward, and the middle connected to the outer one as far as the first joint. The whole of this genus have, till lately, been very imperfectly known; few cabinets possessing more than one species, viz. the greater or common bird of Paradise; nor has any set of birds given rise to more fables, the various tales concerning which are to be found in every author; such as, their never touching the ground from their birth to death; living wholly on the dew; being produced without legs; and a number of other stories too ridiculous to mention.

There are several species; one of which, viz. the *great bird of Paradise*, is thus described:—It is of a cinnamon hue; crown luteous; throat golden green or yellow; side feathers very long and floating; length, from the end of the bill to the end of the real tail, about twelve inches; but to the end of the long hypochondroid feathers, nearly two feet. This species is found in the Molucca islands, and those round New Guinea. They move in flights of thirty or forty, with a leader above the rest, and preserve their light and voluminous plumage in order, by always flying against the wind. The peculiar length and structure of their feathers hinders them from settling in high winds on trees; and when they are thrown on the ground by these winds they cannot rise again.

PAR'ADOX, in philosophy, a tenet or proposition seemingly absurd, or contrary to received opinion, yet true in fact.

PAR'AGOGE (pron. *paragojy*), a figure in grammar by which the addition of a letter or syllable is made to the end of a word.——*Paragoge*, in anatomy, a term signifying that fitness of the bones to one another which is discernible in their articulation.

PAR'AGON, a model by way of distinction implying superior excellence or perfection; as, a *paragon* of beauty or eloquence.

PAR'AGRAM, a play upon words. Hence *paragrammatist*, an appellation for a punster.

PAR'AGRAPH, any section or portion of a writing which relates to a particular point, whether consisting of one sentence or many sentences. Paragraphs are generally distinguished by a break in the lines; or, when a great quantity of print is intended to be compressed in a small space, they may be separated by a dash, thus ——. A paragraph is also sometimes marked thus ¶.

PARALEP'SIS, or PAR'ALEPSY, a figure in rhetoric by which the speaker pretends to pass by what at the same time he really mentions.

PARALIPOM'ENA, in matters of literature, denotes a supplement of things omitted in a preceding work.

PAR'ALLAX, in astronomy, the difference between the places of any celestial objects as seen from the surface, and from the centre of the earth at the same instant.——*Annual Parallax*, a change in the apparent place of a heavenly body, caused by its being viewed from the earth in different parts of its orbit round the sun. The annual parallax of the planets is considerable, but that of the fixed stars has till very recently been considered as altogether imperceptible. The following information is gathered from the Philosophical Magazine: "*Parallax of the Fixed Stars*—A magnificent conquest has been achieved by Professor Bessel, of Konigsburg, in a series of observations of the double star, No. 61, in the constellation Cygnus, whose distance he has ascertained to be 660,000 times (in round numbers) the radius of the earth's orbit, or (also in round numbers) 62,700,000,000,000 miles. The details of this important discovery have been communicated by him to Sir John Herschel, bart., in a letter dated Oct. 23, 1838, which was read to the Astronomical Society on Nov. 9."——*Parallax*, in levelling, denotes the angle contained between the line of the true level and that of the apparent level.

PAR'ALLEL, in geometry, an appellation given to lines, surfaces, and bodies everywhere equidistant from each other.——*Parallel planes*, are such planes as have all the perpendiculars drawn betwixt them equal to each other.——*Parallel rays*, in optics, are those which keep at an equal distance from the visible object to the eye, which is supposed to be infinitely remote from the object.——*Parallel Circles*, or *circles of latitude*, are lesser circles of the sphere conceived to be drawn from west to east, through all the points of the meridian, commencing from the equator to which they are *parallel*, and terminating with the poles. They are called parallels of latitude, because all places lying under the same parallel have the same latitude.——*Parallel sphere*, in astronomy, the situation of the sphere when the equator coincides with the horizon, and the poles with the zenith and nadir.——*Parallel sailing*, in navigation, the sailing on or under a parallel of latitude, or parallel to the equator.——*Parallel ruler*, a mathematical instrument consisting of two equal rulers, so connected together with cross bars, that with movable joints parallel lines may thereby be drawn to any extent when they are opened.——*Parallel lines*, in sieges, are those trenches which generally run parallel with the outlines of the fortress. They serve as places for concentrating the forces to be directed against the fortress, and are usually three feet deep, from nine to twelve feet wide, and of a length adapted to the circumstances of the case.——The word *parallel* is also often used metaphorically, to denote the continued comparison of two objects, particularly in history. Thus we speak of drawing an historical *parallel* between ages, countries, or men.——*Parallel passages*, are such passages in a book as agree in import; as, for instance, the parallel passages in the bible.

PAR'ALLELISM *of the Earth's axis*, in astronomy, that situation of the earth's axis, in its progress through its orbit, whereby it is still directed towards the pole-star; so that if a line be drawn parallel to its axis, while in any one position, the axis, in all other positions, will be always parallel to the same line. This parallelism is the result of the earth's double motion, viz. round the sun and round its own axis; or its annual and diurnal motion; and to it we owe the vicissitudes of seasons, and the inequality of day and night.

PARALLEL'OGRAM, in geometry, a plane figure bounded by four right lines, of which the opposite are parallel and equal to one another.——In common use, this word is applied to quadrilateral figures of more length than breadth.

PARALLELOPIP'ED, in geometry, a

THE APPARENT LONGITUDE IS GREATER THAN THE TRUE LONGITUDE, WHEN THE OBJECT IS EAST OF THE NONAGESIMAL, OTHERWISE LESS.

THE LESS IS THE PARALLAX, ITS DISTANCE FROM THE EARTH'S CENTRE CONTINUING THE SAME.

CREEPING ROOTS ARE EXTREMELY TENACIOUS OF LIFE, FOR CUT THEM IN WHATEVER WAY YOU MAY, ANY PORTION WILL GROW.

THE FIBRES OF PARASITICAL PLANTS ARE THICK AND FLESHY, IN ORDER TO ATTACH THEM FIRMLY TO THE BRANCHES ON WHICH THEY GROW.

regular solid comprehended under six parallelograms, the opposite ones of which are similar, parallel, and equal to each other; or it is a prism whose base is a parallelogram.

PARALLELOPIPE'DIA, in mineralogy, a genus of spars, externally of a determinate and regular figure, always found loose and separate from other bodies, and in the form of an oblique parallelopiped, with six parallelogramic sides and eight solid angles.

PARAL'OGISM, in logic, a false reasoning, or a fault committed in demonstration, when a consequence is drawn from principles which are false, or though true, are not proved; or when a proposition is passed over that should have been proved by the way.

PARAL'YSIS, in medicine, Palsy, or the loss of the power of muscular motion.

PARAM'ETER, in conic sections, a constant line, otherwise called the *latus rectum* of a parabola. A third proportional to any diameter and its conjugate.

PAR'AMOUNT, in law, the supreme lord of the fee. The lords of those manors that have other manors under them are styled lords-paramount; and the king, who, in law, is chief lord of all the lands in England, is thus the lord-paramount.——In common parlance, it means superior to everything else; as, a man's private interest is usually *paramount* to all other considerations.

PAR'ANYMPH, among the ancients, the person who waited on the bridegroom and directed the nuptial solemnities. As the *paranymph* officiated only on the part of the bridegroom, a woman called *pronuba* officiated on the part of the bride.——In poetry, the term paranymph is still occasionally used for the *brideman*.

PAR'APEGM, in ancient customs, signified a brazen table fixed to a pillar, on which laws and proclamations were engraved. Also, a table set in a public place, containing an account of the rising and setting of the stars, eclipses, seasons, &c.

PAR'APET, in fortification, a wall, rampart, or elevation of earth for screening soldiers from an enemy's shot. It means literally, a wall breast high.

PARAPHERNA'LIA, or PARAPHER'NA, in law, the goods which a wife brings with her at her marriage, or which she possesses beyond her dower or jointure, and which remain at her disposal after her husband's death. They consist principally of the woman's apparel, jewels, &c., which, in the lifetime of her husband, she wore as the ornaments of her person; nor can the husband devise such ornaments and jewels of his wife, though, during his life, he has power to dispose of them.

PAR'APHRASE, an explanation of some text or passage in an author, in terms more clear and ample than in the original.—He who performs this is termed a *paraphrast*.

PARAPHRENI'TIS, in medicine, an inflammation of the diaphragm.

PARAPHROSY'NE, a term used by medical writers to express a delirium, or an alienation of mind in fevers, or from whatever cause.

PARAPLE'GIA, or PAR'APLEGY, in medicine, a species of paralysis usually succeeding an apoplexy: that kind of palsy which affects the lower part of the body.

PARARYTH'MOS, in medicine, a pulse not suitable to the age of the person.

PAR'ASANG, a Persian measure of length, varying in different ages, and in different places, from thirty to fifty stadia or furlongs.

PARASCE'NIUM, in the Grecian and Roman theatres, was a place behind the scenes whither the actors withdrew to dress and undress themselves. The Romans more frequently called it *postscenium*.

PARASCE'VE, a word signifying *preparation*, given by the Jews to the sixth day of the week, or Friday; because, not being allowed to prepare their food on the sabbath day, they provided and prepared it on the day previous.

PARASELE'NE, a mock moon, or phenomenon encompassing or adjacent to the moon, in form of a luminous ring; which are sometimes one, two, or more bright spots bearing considerable resemblance to the moon. The paraselenes are formed after the same manner as the *parhelia*, or mock suns.

PARASI'TI, among the Greeks, were an order of priests, or at least ministers of the gods, resembling the *Epulones* at Rome. Their business was to collect and take care of the sacred corn destined for the service of the temples and the gods; to see that sacrifices were duly performed, and that no one withheld the first fruits, &c. from the deities. In every village of the Athenians, certain *Parasiti*, in honour of Hercules, were maintained at the public charge; but, to ease the commonwealth of this burthen, the magistrates at last obliged some of the richer sort to take them to their own tables, and entertain them at their individual expense: hence the word *parasite*, by which we denote a hanger-on, a fawning flatterer, one who, for the sake of a good dinner at the expense of another person, would be ready to surfeit him with adulation.

PARASIT'ICAL PLANTS, in botany, such plants as are produced out of the trunk or branches of other plants, and receive their nourishment from it. Of this class is the misletoe, which shoots out its radicle in whatever position chance places it. The seed, which finds the materials of its growth in the glue that envelopes it, germinates and grows not only on living and dead wood, but also on stones, glass, and even iron. In all these cases the radicle is constantly directed towards the centre of these bodies, which proves that it is not towards a medium suited to afford it nourishment that the embryo of the misletoe directs its radicle, but that this radicle obeys the attraction of the bodies on which the seed is fixed, of whatever nature they may be.

PARASI'TIUM, among the Greeks, the

granary where the sacred corn was preserved, by the *Parasiti*, for sacred purposes.

PARASTREMMA, in medicine, a convulsive distortion of the mouth, or any part of the face.

PARATHESIS, a term used by some grammarians for apposition, or the placing of two or more nouns in the same case.

PARAVAIL, in feudal law, the lowest tenant holding under a mediate lord, as distinguished from a tenant in *capite*, who holds immediately of the king.

PARCÆ, or the FATES, in the heathen mythology, were three goddesses who were supposed to preside over the accidents and events, and to determine the date or period of human life. They were called Atropos, Clotho, and Lachesis, and are represented as spinning the thread of human life; in which employment Clotho held the distaff, Lachesis turned the wheel, and Atropos cut the thread. Their persons are variously described; sometimes they are represented as old women, one holding a distaff, another a wheel, and a third a pair of scissars. Others paint Clotho in a robe of various colours, with a crown of stars upon her head, and holding a distaff in her hand; Lachesis in a garment covered with stars, and holding several spindles; and Atropos they clad in black, cutting the thread with a large pair of scissars.

PARCENER, or CO-PARCENER, in law, a coheir, or one who holds lands by descent from an ancestor in common with others. The holding or occupation of lands of inheritance by two or more persons, differs from *joint tenancy*, which is created by deed or devise, whereas *parcenary* is created by the descent of lands from a common ancestor.

PARCHMENT, in commerce, the skins of sheep or goats prepared in such a manner as to render them proper for writing upon. This is done by separating all the flesh and hair, rubbing the skin with pumice-stone and pulverized chalk, and reducing its thickness with a sharp instrument. *Vellum* is made of the skins of abortive or very young calves. The Hebrews had books written on the skins of animals in David's time; and Herodotus relates, that the Ionians from the earliest period wrote upon goat and sheepskin, from which the hair had been merely scraped off.

PARELCON, in grammar, the addition of a word or syllable at the end of another.

PAREMBOLE, a figure in rhetoric, often confounded with the *parenthesis*. The parembole is, in reality, a species of parenthesis; but its specific character is this, that *it relates to the subject;* while the parenthesis is foreign from it.

PARENCHYMA, in anatomy, the solid and interior part of the viscera, or the substance contained in the interstices between the blood-vessels of the viscera.——In botany, the pith or pulp of plants.

PARENT (*parens*), a term of relationship applicable to those from whom we immediately receive our being. Parents, by the law of the land as well as by the law of nature, are bound to educate, maintain, and defend their children, over whom they have a legal as well as a natural power: they likewise have interest in the profits of their childrens' labour, during their nonage, in case the children live with and are provided for by them; yet the parent has no interest in the real or personal estate of a child, any otherwise than as his guardian. The laws relating to the mutual rights and duties of parents and children are a very important part of every code, and have a very intimate connexion with the state of society and with civil institutions. In ancient times, when paternity was a great foundation of civil authority, the parental rights were much more absolute than in the modern, extending, in some countries, to the right of life and death, and continuing during the life of the two parties.

PARENTALIA, in antiquity, funeral obsequies, or the last duties paid by children to their deceased parents. The term is also used for a sacrifice, or solemn service, offered annually to the manes of the dead.

PARGASITE, in mineralogy, a variety of *actinolite*; a mineral of a grayish or bluish green, in rounded grains, with a dull, dun-coloured surface; or in crystals of carbonate of lime, in little plates mixed with lamellar mica.

PARHELION, in astronomy, a mock sun or meteor, having the appearance of the sun itself and seen by the side of that luminary. Parhelia are sometimes double, sometimes triple, and sometimes even more numerous. They are formed by the reflection of the sun's beams on a cloud properly situated; and are accounted for by supposing an infinity of little particles of ice floating in the air, which multiply the image of the sun by refraction or reflection. Sometimes a *parhelion* is tinged with colours like the rainbow, with a luminous train.

PARIAN MARBLE, a sort of white marble, so called from the island of Paros, where it was first found.——*Parian Chronicle.* [See ARUNDELIAN MARBLES.]

PARIAS, a degraded tribe of Hindoos, who live by themselves in the outskirts of towns; and, in the country, build their houses apart from the villages, or rather have villages of their own. They dare not in cities pass through the streets where the Brahmins live; nor enter a temple of the superior castes. They are prohibited from all approach to any thing pure, and are doomed to perform all kinds of menial work.

PARIETAL BONES, in anatomy, two arched bones situated one on each side of the superior part of the cranium. They are thicker above than below; but are somewhat thinner, and at the same time more equal and smooth than the other bones of the cranium. In new-born infants the *ossa parietalia* are separated from the middle of the divided *os frontis* by a portion of the cranium then unossified.

PAR IMPAR, in antiquity, a game of chance practised among the Greeks and Romans. It was identical with the game

IN CASE OF THE DECEASE OF THE FATHER, THE LAW TRANSFERS HIS AUTHORITY, WITH SOME LIMITATIONS, OVER HIS CHILDREN TO THE MOTHER.

THE LAW EXTENDS ITS PROTECTION TO THE CHILD BY APPOINTING ANOTHER GUARDIAN; AND LAW EXTENDS ITS PROTECTION TO THE CHILD BY APPOINTING ANOTHER GUARDIAN.

of "even or odd" practised by the boys of modern times.

PA'RIS, Plaster of, a composition of lime and sulphuric acid, used in making casts and moulds.

PAR'ISH, the precinct or territorial jurisdiction of a secular priest, the inhabitants of which belong to the same church. Some parishes are, however, so large and populous, that they contain one or more chapels of ease. In 1835, England and Wales contained 11,077, and Ireland 2450 parishes.

PARK, a large piece of ground enclosed and privileged for beasts of the chase. To render an enclosure a park, a licence must be obtained under the broad seal; but there are parks *in reputation*, though not erected with lawful warrant; and the owner of such may bring his action against any one stealing deer therein. To constitute a park, three things are required; a royal grant or license; inclosure by pales, a wall, or hedge; and beasts of chase, as deer, &c.——*Park* also signifies a large net placed on the brink of the sea, with only one entrance, which is next the shore, and which is left dry by the ebb of the tide.——*Park of artillery*, a place in the rear of both lines of an army for encamping the artillery, which is formed in lines, the guns in front, the ammunition-wagons behind the guns, and the pontoons and tumbrils forming the third line. The whole is surrounded with a rope. The gunners and matrosses encamp on the flanks; the bombardiers, pontoon-men and artificers in the rear.—The phrase is also applied to denote the whole train of artillery belonging to an army or division of troops.——*Park of provisions*, the place where the sutlers pitch their tents and sell provisions, and that where the bread-wagons are stationed.

PAR'LIAMENT, the grand assembly of the three estates in Great Britain, or the great council of the nation, consisting of the King, Lords, and Commons, which forms the legislative branch of the government. The word *parliament* was introduced into England under the Norman kings. The supreme council of the nation was called by our Saxon ancestors, the *wittenagemote*, the meeting of wise men or sages. A parliament is called by the king's [queen's] writ, or letter, directed to each lord, summoning him to appear; and by writs sent by the lord chancellor under the great seal, commanding the sheriffs of each county to take the necessary steps for the election of members for the county, and the boroughs contained in it. On the day appointed for the meeting of parliament, the king [queen] sits in the house of lords under a canopy, dressed in his [her] robes, as are all the lords in theirs; and, the commons being summoned to the bar of that house, the sovereign addresses both houses on the state of public affairs. The commons are then required to choose a speaker, which officer being presented to and approved by the sovereign, the latter withdraws, the commons retire to their own house, and the business of parliament begins. In the house of lords, the seat of each member is prescribed according to rank; though, except in the presence of the king [queen] this formality is almost wholly dispensed with. The princes of the blood sit on each side the throne; the two archbishops against the wall on the king's right hand; the bishops of London, Durham, and Winchester below the former, and the other bishops according to priority of consecration. On the king's [queen's] left hand, above all the dukes except those of the blood royal, sit the lord treasurer, lord president, and lord privy-seal; then the dukes, marquises, and earls, the individuals of each class taking precedence according to the date of their creation. Across the room are woolsacks, continued from ancient custom; and on the first of these, immediately before the throne, sits the lord chancellor, as speaker of the house. On the other woolsacks are seated the judges, masters in chancery, and king's counsel, who only give their advice on points of law.—In the house of commons there are no peculiar seats for any members. The speaker only has a chair appropriated to him at the upper end of the house, and at a table before him sit the clerk and his assistant. When the parliament is thus assembled, no member is to depart without leave. Upon extraordinary occasions, all the members are summoned; otherwise, three hundred of the commons is reckoned a full house, and forty may compose a house for the dispatch of business. The method of making laws is much the same in both houses. In each house the act of the majority binds the whole; and this majority is declared by votes openly given; not privately, or by ballot.—To bring a *bill* into the house of commons, if the relief sought by it is of a private nature, it is first necessary to prefer a petition, which must be presented by a member, and usually sets forth the grievance desired to be remedied. In public matters, the bill is brought in upon motion made to the house, without any petition.—A *committee of the whole house* is composed of every member; and, to form it, the speaker quits the chair (another member being appointed chairman), and may sit and debate as a private member. In these committees the bill is debated clause by clause, amendments made, the blanks filled up, and sometimes the bill entirely new-modelled. After it has gone through the committee, the chairman reports it to the house with such amendments as the committee have made; and then the house reconsider the whole bill again, and the question is repeatedly put upon every clause and amendment. When the house have agreed or disagreed to the amendments of the committee, and sometimes added new amendments of their own, the bill is then ordered to be engrossed. When this is finished, it is read a third time, and amendments are sometimes then made to it; and if a new clause be added, it is done by tacking a separate piece of parchment on the bill, which is called a *rider*. The speaker then again opens the contents, and, holding it up in his hands, puts the

question whether the bill shall pass. If this be agreed to, the title is then settled; and one of the members is directed to carry it to the lords for their concurrence. When both houses have done with any bill, it always is deposited in the house of peers, to wait the royal assent, except in the case of a money bill, which, after receiving the concurrence of the lords, is sent back to the house of commons. The answer to the question put by the speaker, or the chairman, in the house of commons, is *Ay* or *No*; and in the house of peers, *Content* or *Not Content*. The royal assent to bills may be given, either in person (when the sovereign appears on the throne in the house of peers, regally attired), or by letters patent under the great seal, and duly signed. And when the bill has received the royal assent in either of these ways, it is then, and not before, a statute or act of parliament.

PARLIAMENTA'RIAN, an epithet for those who sided with the English republican parliament in opposition to king Charles I.

PAR'ODY, a kind of writing in which the words of an author or his thoughts are, by some slight alterations, adapted to a different purpose; or it may be defined, a poetical pleasantry in which the verses of some author are, by way of ridicule, applied to another object; or in turning a serious work into burlesque by affecting to observe the same rhymes, words, and cadences.

PARO'L, in law, anything done verbally, or by oral declaration; as *parol evidence*. ——*Parole*, in military affairs, a promise given by a prisoner of war when suffered to be at large, that he will return at the time appointed, unless he shall have previously been discharged or exchanged.——*Parole* also means the watch-word given out every day in orders by a commanding officer, in camp or garrison, by which friends may be distinguished from enemies.

PAROMOL'OGY, in rhetoric, a figure of speech by which the orator concedes something to his adversary, in order to strengthen his own argument.

PARONOMA'SIA, a rhetorical figure, by which words nearly alike in sound, but of very different or opposite meanings, are affectedly or designedly used; a play upon words.

PARONYC'HIA, in medicine, a whitlow, or abscess formed near the nails or tips of the fingers. Any collection of pus formed in the fingers is termed by medical writers *panaris*, or whitlow, and is an abscess of the same nature with those arising in any other parts of the body.

PAR'RICIDE, strictly signifies the murder or murderer of a father, as *matricide* does of a mother; yet this word is ordinarily taken in both senses, and is also extended to the murder of any near relation. The word *parricide* is also applied to one who invades or destroys any to whom he owes particular reverence, as his country or patron. By the Roman law it was punished in a severer manner than any other kind of homicide. After being scourged, the delinquents were sewn up in a leathern sack, with a live dog, a cock, a viper, and an ape, and thus cast into the sea. Solon, it is true, made no law against parricide, apprehending it impossible that any one should be guilty of so unnatural a barbarity.

PARRICIDIUM, a name given by a decree of the Roman senate to the ides of March, which was the anniversary of Cæsar's assassination. Dolabella the consul proposed a law to change its name to *Natalis Urbis*, as he looked on that day as the birthday of Roman liberty.

PARO'TIS, or PAROT'ID GLAND, in anatomy, a large conglomerate and salival gland, situated under the ear, between the mammillary process of the temple bone and the angle of the lower jaw. The excretory duct of this gland opens in the mouth, and is called, from its discoverer, the *Stenonian* duct. The word *parotis* is also used to denote an inflammation or abscess of the parotid gland.

PAR'OXYSM, in medicine, a fit of higher excitement or violence in a disease that has remissions or intermissions; as the *paroxysm* of a fever or the gout.

PAR'REL, among seamen, an apparatus or frame made of ropes, trucks, and ribs, so contrived as to go round the mast, and being fastened at both ends to a yard, serves to hoist it.

PAR'ROT, in ornithology, the name given to birds of the genus *Psittacus*, the species of which are very numerous. Parrots are found almost everywhere in tropical climates. They are distinguished by a hooked bill, a movable upper mandible, rich plumage, and by the faculty they possess of making indistinct articulations of words in imitation of the human voice. Their hooked bill is very serviceable to them in climbing. They breed in hollow trees, subsist on fruits and seeds, and often attain a great age. The common gray parrot is the most remarkable for its loquacity, docility, and distinctness of articulation; but many of the varieties are far more beautiful.

PARS'ING, in grammar, the resolving a sentence into its elements, by showing the several parts of speech of which it is composed, and their relation to each other according to grammatical rules.

PARS'LEY, in botany, a well known garden vegetable, of the genus *Apium*. The leaves are much used in cookery, communicating an aromatic and agreeable flavour to soups and other dishes; and the root is an aperient medicine. Among the Greeks, parsley was made use of for decorating the tombs of the deceased, and consequently was regarded as a vegetable not much calculated to contribute to agreeable sensations. It was, however, the herb of which, in the Isthmian and Nemean games, the crowns of the victors were composed. Among the Romans, parsley was considered a necessary ingredient in their festive garlands, because it retains its verdure a long time, affords a grateful smell, and was supposed to absorb the inebriating fumes of wine, and by that means prevent intoxication.

AN ACT OF PARLIAMENT CANNOT BE ALTERED, SUSPENDED, OR REPEALED, BUT BY THE SAME FORMS, AND BY THE SAME AUTHORITY OF PARLIAMENT.

PARS'NEP, in botany, a well known culinary vegetable, of the genus *Pastinaca*; the root of which is deemed a valuable esculent. Besides their use for the table, parsneps are often cultivated on an extensive scale as fodder for cattle. The milk of cows is improved in quality, and the quantity is increased by them, while butter of a fine saffron yellow colour, and excellent flavour, is produced by this food. As the roots are not liable to injury from frosts, they may remain in the ground all the winter, and be taken up as required.

PAR'SON, the rector or incumbent of a parish, who has the parochial charge or cure of souls.——*Parsonage*, a rectory endowed with a house, glebe, lands, tithes, &c., for the maintenance of the incumbent. There may, notwithstanding, be a parsonage without either glebe or tithes, but only annual payments.——*Parson Imparsonee*, signifies one that is in possession of a church, whether it be presentative or impropriate, and with whom the church is then full.

PARTER'RE, in gardening, a level division of ground furnished with evergreens and flowers; sometimes cut into shell and scroll work with alleys between them.

PAR'THENON, in ancient architecture, the name given to the celebrated Grecian temple of Minerva, erected during the splendid era of Pericles. It was built of marble upon a spot elevated on all sides above the town and citadel; of the Doric order; 222 Greek feet in length, and 69 in height. This magnificent temple had resisted all the ravages of time; had been in turn converted into a Christian church and a Turkish mosque; but in the year 1687, when the Venetians besieged the citadel of Athens, under the command of general Kœnigsmarck, a bomb fell most unluckily on the devoted Parthenon, set fire to the powder which the Turks had shut up therein, and thus the roof was entirely destroyed, and the whole building almost reduced to ruins.

PAR'TIAL, in botany, an epithet for *subordinate*; as, a *partial* umbel; a *partial* peduncle. A partial involucre is placed at the foot of a partial umbel.

PARTICEPS CRIM'INIS, in law, an accomplice, or one who has a share in the guilt.

PAR'TICIPLE, in grammar, a word so called because it participates of both a noun and a verb; being variable through the genders and cases like the former, and regarding time, action, passion, &c. like the latter.——Participles sometimes lose the properties of a verb, and become adjectives; as, she is a girl of *engaging* manners; that man is an *accomplished* orator.

PAR'TICLE, in physics, a minute part of a body, an aggregation or collection of which constitutes the whole body or mass. Sometimes it is used in the same sense as *atom*; as, *particles* are the elements or constituent parts of bodies. It also signifies a very small portion or part; he has not a *particle* of virtue; he would not resign a *particle* of his property.——In grammar, *particles* are such parts of speech as are incapable of any inflection, as the preposition, conjunction, &c. Many grammarians have, however, dropped this name, and divided all parts of speech into declinable and indeclinable.

PAR'TITE, in botany, an epithet for divided: thus, a *partite* leaf is a simple leaf separated down to the base.

PART'NERS, in a ship, strong pieces of timber bolted to the beams encircling the masts, to keep them from *rolling*, that is, falling over the ship's sides.

PART'NERSHIP, the association of two or more persons for the prosecution of any trade, manufacture, or commercial enterprise, at their joint expense. In this case the connection is formed by contract; each partner furnishing a part of the capital stock, and being entitled to a proportional share of profit, or subject to a proportional share of loss; or one or more of the partners may furnish money or stock, and the others may contribute their services. A partnership or association of this kind is a standing or permanent company, and is denominated a *firm* or *house*. Though partnerships ought not to be entered into without great circumspection, the benefits of a union of the means and advantages of different persons for the conduct of a business, in many instances, are too obvious to need illustration.

PARTRIDGE, in ornithology, a well-known bird of the genus *Tetrao*, comprehending grouse, partridges, and quails, in all 75 species. The common partridge (*perdix*) is found all over Europe. The places partridges delight in most are corn fields, especially whilst the corn grows; for under that cover they shelter and breed; and they are frequented by them when the corn is cut down for the grain. They contribute so much to the gourmand's pleasure that many experiments were formerly in use to take them alive; but their destruction is now almost entirely reserved for the shot of the sportsman, or the net of the poacher.

PAR'TY, in a political sense, has been well defined, "the madness of the many for the gain of the few." Yet it differs from *faction*, in implying a less dishonourable association of persons, or more justifiable designs. Free governments are the hotbeds of party; yet, probably, without the existence of opposing parties in a state, civil freedom would no longer exist.——*Party*, in military affairs, a small detachment or number of men sent upon any particular duty, as a recruiting party, &c.——The word *party* is likewise used to qualify other words, and may be considered either as part of a compound word, or as an adjective; as *party* rage, *party* disputes, &c.——*Party-coloured*, having divers colours; as, a party-coloured plume, &c.——*Party-walls*, partitions of brick made between buildings separately occupied, to prevent the spreading of fire.——*Party-jury*, in law, a jury consisting of half foreigners and half Englishmen.

PARU'LIS, in medicine, an inflammation, boil, or abscess in the gums.

SIR E. COKE OBSERVES, THAT THE APPELLATION OF PARSON IS THE MOST LEGAL AND MOST HONOURABLE TITLE A PARISH PRIEST CAN ENJOY.

IN 1800, LORD ELGIN REMOVED A VARIETY OF THE STATUES, FRIEZES, &C. FROM THE PARTHENON, WHICH ARE NOW TO BE SEEN IN THE BRITISH MUSEUM.

PASIGRAPHY, a system of universal writing, or a manner of writing that may be understood and used by all nations. Numerous have been the attempts to establish a universal language, particularly by the philosophic and persevering Germans; but hitherto all their efforts have been fruitless.

PAS'QUIN, a name given to a mutilated statue which stands at the corner of the palace of Ursini, in Rome; and so called from the name of a cobbler famous for his sneers and gibes, and who diverted himself with passing jokes upon all the people who went through his street. After the death of this man, some workmen, who were digging up the pavement before his shop, found in the earth a statue of an ancient gladiator, well executed, but maimed: this they set up in the place where it was found, and by common consent named it Pasquin. Since that time, all satirical papers in that city are attributed to this figure, and either put into its mouth, or pasted on its body. Hence the word *pasquinade* for a lampoon. The difference between a *pasquinade* and a *satire* is, that the end of the latter is to correct and reform, while that of the former is only to ridicule and expose.

PASS, in military affairs, a strait narrow passage, which renders the entrance into a country difficult for an army.——*Pass*, among miners, a frame of tin boards set sloping for the ore to slide down.——*Pass of arms*, in chivalry, a bridge, road, &c. which the ancient knights undertook to defend. The knights who held a pass, hung up their arms on trees, pales, columns, &c. erected for that purpose; and such as were disposed to dispute the pass, touched one of the pieces of armour with his sword, which was a challenge the other was obliged to accept.——*Pass-parole*, in military affairs, a command given at the head of an army and communicated by word of mouth to the rear.——*Pass-word*, a secret word or countersign which enables any person to pass through military stations.——*Pass-par-tout*, a master-key; or a key that opens several locks belonging to the same house or apartment.

PASSA'DE, or PASSA'DO, in fencing, an advance or leap forward upon the enemy. Of these there are several kinds, as passes within, above, beneath, to the right, the left, and passes under the line, &c.——*Passade*, in the manege, is a turn or course of a horse backwards or forwards, on the same spot of ground.

PAS'SAGE, in navigation, the course pursued at sea; or the time of passing from one place to another; as, we had a passage in the British Queen, from England to America, in thirteen days.——*Passage*, in music, a succession of sounds forming a member or phrase in a composition.——*Right of passage*, in commerce, is an imposition or duty exacted by some princes, either by land or sea, in certain confined or narrow places in their territories, on all vessels, and even sometimes on persons or passengers coming in or going out of ports, &c.——*Birds of passage*, those birds which at certain seasons migrate, or pass from one climate to another. [See MIGRATORY BIRDS, &c.]

PAS'SANT, in heraldry, a term applied to a lion or other animal in a shield appearing to walk leisurely. When walking with his head *affronté*, or looking full-faced, it is termed *passant gardant*.——*En passant* (Fr.) by the way.

PAS'SERES, in ornithology, the sixth order of birds, having a conic, sharp beak, with bent and sharp claws; including pigeons, sparrows, blackbirds, swallows, &c.

PAS'SERINE, pertaining to sparrows or to the order of birds to which sparrows belong, the *Passeres*.

PAS'SING-BELL, the bell that is tolled at the hour of death, or immediately after death. The *passing-bell* was originally intended to drive away any demon that might seek to take possession of the *soul* of the deceased, on which account it was sometimes called the *soul-bell*. Mr. Ellis in his notes to Brand, quotes Wheatley's apology for our retaining this ceremony; "Our church," says he, "in imitation of the saints in former ages, calls on the minister, and others who are at hand, to assist their brother in his last extremity. In order to this, she directs, that when any one is passing out of this life a bell should be tolled," &c. Hence the proverb mentioned by Bede.:—

When the bell begins to toll,
Lord have mercy on the soul.

PAS'SION, or THE PAS'SIONS, strong feelings or emotions of the mind excited by an adequate cause, and existing in such strength as to engross the whole man, and resist the influence of every other cause of sensation. In order to form a clear notion of *the passions*, we must begin with rejecting the phrase that man is possessed of this or that number of passions, and say that he is possessed of *one* quality, that is, susceptibility, which is liable to be acted upon by this or that number of causes. Man, therefore, has not so many feelings, but one feeling, assuming different forms of appearance according to the impression it receives; and the number of passions is exactly that of the circumstances that are important to a sentient creature. Now, these, in a comprehensive point of view, are only of two kinds; those that contribute to its pleasure, and those that are productive of pain. It is for this reason that, according to some, man has only two passions; the desire of happiness, and the aversion to evil; but subdivided, each order has its genera, and each genus its species. The desire of happiness is separated into love, or the wish to possess that which will impart happiness; hope, which is the expectation of possessing it; and joy, which is the assurance of possession. The aversion to evil is separated into fear, which belongs to the dread of evil: grief, which belongs to the presence of it; and anger, which resents it. These, again, to which also other genera may be added, are distinguished into species; as, to fear belong terror and horror; and to an-

ger, envy, jealousy, hatred, and malice. Some think the most natural division of the passions is into pleasurable and painful:

"Love, hope, and joy, fair pleasure's smiling train;
Fear, grief, and hate, the family of pain."

——In a medical point of view, it may be observed that the passions of the mind chiefly affect the stomach, inverting its motion, and hindering digestion and chylification; from which disordered state of the economy many crudities arise, productive of various diseases.——In painting and sculpture, the various passions are indicated by the general attitude of the figure, but more particularly by the mental expression of the features.

PAS'SION-FLOWER (*passiflora*), in botany, a genus of climbing plants, class 20 *Gynandria*, order 5 *Pentandria*; containing numerous species, remarkable for the elegance and singular form of their flowers. They are all natives of warm foreign countries, and only one of them is sufficiently hardy to succeed well here in the open ground; the others requiring shelter and heat. Their stems are woody, or, more frequently, herbaceous, provided with tendrils, and bearing alternate simple or lobed leaves; the flowers are axillary, and supported on peduncles; the calyx is widely spreading, and divided into ten parts. To the base of the calyx is attached an interior crown, composed of a great number of filaments. The *passiflora cærulea*, or blue-rayed common palmated passion-flower, has long slender stalks, ascending, upon support by their claspers, thirty or forty feet high, with one large palmated leaf at each joint, and at the axillas large spreading flowers, with whitish-green petals, and a blue radiated nectarium; succeeded by large, oval, yellowish fruit. It flowers from July until October; the flowers are very large, conspicuous, and their composition is exceedingly curious and beautiful; but they are only of one day's duration, generally opening about 11 or 12 o'clock, and gradually closing the next day, when they assume a decayed appearance, and new flowers succeed. In some Catholic countries this plant is held in great veneration, the religious making the leaves, tendrils, and different parts of the flower to represent the instruments of our Saviour's passion; hence the name.

PAS'SION-WEEK, the week immediately preceding the festival of Easter; so called, because in that week our Saviour's passion and death happened. The Thursday in this week is called *Maundy Thursday*, and the Friday, *Good Friday*. The "passion of Christ" is celebrated in the Catholic and most Protestant churches on the European continent during Lent, and particularly during Passion-week, by sermons relating to the sufferings of the Saviour; and it is no inconsiderable treat to the lovers of sacred music who may be sojourning at Rome during the time, to hear the compositions of Palestrini, Pergolese, Allegri, &c., in the purest style, as performed in the *Capella Sistina*.

PAS'SIVE, in grammar, a term given to a verb which expresses passion, or the effect of an action of some agent; as, in Latin, *doceor*, I am taught; or, in English, as, she *is loved* and *esteemed*; he *is assailed* by clandestine foes.——*Passive obedience*, in civil polity, denotes not only quiet unresisting submission to power, but implies the denial of the right of resistance, or the recognition of the duty to submit in all cases to the existing government.——*Passive prayer*, among mystic divines, is a suspension of the soul or intellectual faculties, and yielding only to the impulses of grace.——*Passive principles*, in chemistry, earth and water, so called because their parts are not so swiftly moved as those of spirits, oil, and salt.——*Passive commerce*, trade in which the productions of a country are carried on by foreigners in their own ships: opposed to *active* commerce. [See NAVIGATION LAWS.]

PAS'SOVER, a solemn festival of the Jews, celebrated on the 14th day of the month following the vernal equinox, and instituted in commemoration of their providential deliverance on the night before their departure from Egypt, when the destroying angel, who put to death the first-born of the Egyptians, *passed over* the houses of the Hebrews, which were sprinkled with the blood of a lamb.

PASS'PORT, a written license from a king, governor, or other proper authority, granting permission or safe conduct for one to pass through his territories, or to pass from one country to another, or to navigate a particular sea without molestation. Also, a license for importing or exporting contraband goods or movables without paying the usual duties. In all passports it is usual to describe the persons, purposes, and destinations of the traveller, intended to show that their characters are good, and their objects in travelling lawful.

PASTE, a soft composition of substances. Thus, flour moistened with water or milk and kneaded, is used in cookery; and certain kinds of earth moistened and formed to the consistence of dough, is used in various arts and manufactures as a cement.

PASTE, an artificial mixture or kind of coloured glass made of calcined crystal, lead, and metallic preparations, so as to imitate gems.——In mineralogy, the mineral substance in which other substances are imbedded.

PAS'TERN, that part of a horse's foot under the fetlock to the heel.

PAS'TIL, in pharmacy, a dry composition of sweet-smelling resins, aromatic woods, &c. burnt to clear and scent the air of a chamber. There are also pastils for chewing, in order to render the breath sweet.——*Pastil*, among painters, a roll of paste made up of various colours with gum-water, in order to make crayons.

PASTOPH'ORI, in antiquity, priests among the Greeks and Romans whose office it was to carry the images along with the shrines of the gods at solemn festivals. The cells or apartments near the temples

where the *Pastophori* lived, were called *Pastophoria*.

PASTORAL, something descriptive of a shepherd's life; or a poem in which any action or passion is represented by its effects on a country life. The complete character of this poem consists in simplicity, brevity, and delicacy; the two first of which render an eclogue or idyl natural, and the last delightful. As the first strains of poetry must have been heard in the primitive times of the human race, and as a shepherd's life is congenial with this mode of occupation, we naturally consider poetry as having originated in the pastoral period; but the poetic idea of pastoral life, where all is purity and simplicity, is not supported by experience in past or present times.

PASTORA'LE, in ecclesiastical affairs, that part of theology which includes the execution of the duties of the clergyman, or the practical application of his theological knowledge. In the *pastorale* of a Roman Catholic priest, the chief part of the canon law is comprised; while that of the Protestant minister consists of principles addressed merely to his understanding, including certain rules which experience has shown to be important for the execution of clerical duties.

PAS'TURE, or PAS'TURE LAND, in agriculture, ground covered with grass appropriated for the food of cattle.——*Common of pasture*, is the right of feeding cattle on another's ground.

PA'STY, a preparation of venison, veal, lamb, or other meat; which being well boned, beaten to a pulp, and highly seasoned, is enclosed in a proper paste, and baked without a dish.

PATA'CHE [Sp.] a tender, or small vessel employed in conveying men or orders from one ship to another.

PATACOON', a Spanish coin of the value of 4*s.* 8*d.* sterling.

PATAVIN'ITY, a term used by classical scholars to denote a peculiarity of Livy's diction; so denominated from *Patavium* or *Padua*, the place of his nativity; but as authors are not agreed as to what this *patavinity* consists in, it may reasonably be concluded that it is one of those delicacies which are undiscernible when a language is no longer spoken.

PATE, in fortification, a kind of platform, resembling what is called a horse-shoe; not always regular, but generally oval, encompassed only with a parapet, and having nothing to flank it.

PATEE' or PATTEE', in heraldry, a cross, small in the centre and widening to the extremities, which are broad.

PATEL'LA, in anatomy, a bone which covers the fore part of the joint of the knee, called also *rotula*, and popularly the knee-pan. The patella is composed internally of a cellular substance, covered by a thin bony plate; but its cells are so extremely minute, that the strength of the bone is, upon the whole, very considerable. This bone defends the articulation of the joint of the knee from external injury: it likewise tends to increase the power of the muscles which act in the extension of the leg, by removing their direction farther from the centre of motion.——*Patella*, in conchology, a genus of shell-fish, with a simple shell, of a conic or other gibbous figure, and a very wide opening at the mouth or bottom; always applying itself firmly to some solid body, which serves it in the place of another shell; the animal inhabiting it is called *limax*.——The fossil remains of the patella are called a *patellite*.

PATENTS, or LETTERS PATENT (*open* letters), writings sealed with the great seal, granting a privilege to some person, or authorizing a man to do or enjoy that which he could not of himself. They are called *patent* on account of their form being open, ready to be exhibited for the confirmation of the authority delegated by them. Letters patent for new inventions are obtained by petition to the crown: they have to go through many offices, and are liable to opposition on account of want of novelty, &c.; and if obtained, and it can be proved that the invention was not new, or had been made public previously to the granting the patent, they may be set aside. In general, any invention of a new and useful art, machine, manufacture, or composition of matter not known or used before, or any new and useful improvement in these, is *patentable*. But the invention must be *material* and *useful;* while at the same time it must not be hurtful to trade generally, nor mischievous, nor immoral.—In the *Specification* the invention for which a patent is granted must be accurately ascertained, and particularly described. It must be so explicit, that mechanics may be able to make the machine by following the directions of the specification, without any new inventions of their own. The patent and specification are linked together by the title given to the invention in the patent, and the description of it in the specification, which latter must set forth the invention fully and correctly. The terms used must be clear and unambiguous; no necessary description must be omitted, nor what is unnecessary be introduced; and the invention must be described in the best and most improved state known to the inventor. If any one of these conditions be not complied with, the patent will be void.—*Duration of the Patent.* In England and the United States of America, patents are granted for a term not exceeding fourteen years. The time in England may be prolonged by a private act, and in the United States by act of congress. In France, patents are given for five, ten, or fifteen years, at the option of the inventor; but this last term is never to be prolonged without a particular decree of the legislature.—The *caveat* is an instrument by which notice is requested to be given to the person who enters it, whenever any application is made for a patent for a certain invention, which is therein described in general terms, and must be renewed annually. It simply gives notice that the invention is nearly com-

A VALID PATENT MAY BE OBTAINED FOR AN INVENTION "NEW IN THIS REALM," THOUGH IT MAY HAVE BEEN PREVIOUSLY PRACTISED ABROAD.

pleted, with a request that, if any other person should apply for a patent for the same thing, the preference may be given to him who entered it.—*Expense of Patents.* The expense of stamps, fees, &c. may be estimated at 120*l.* for England, 100*l.* for Scotland, and 125*l.* for Ireland; it being necessary that separate patents should be taken out for each, if it be intended to secure the privilege for the three kingdoms.

PA'TERA, in architecture, an ornament frequently seen in the Doric frieze, and in the tympans of arches. The patera was a small dish or vase used by the Romans in their sacrifices, in which they offered their consecrated food to the gods, and with which they made libations; and hence, as the Doric was used for temples, it became an ornament of that order. It was also enclosed in urns with the ashes of the dead, after it had been used in the libations of wine and other liquors at the funeral.

PA'TERNOSTER, the Lord's prayer, so called from the two first words thereof in Latin. It is also sometimes used for a rosary or string of beads, used by Roman catholics in their devotions; but more especially for every tenth large bead in the said rosary; for at this they repeat the Lord's prayer; and at the intervening small ones, only an *Ave Maria.*——In architecture, the same term is used for an ornament cut in the form of beads, either oval or round, for astragals, &c.——*Paternoster cross,* in heraldry, a cross represented on the escutcheon as if made with beads.

PATHET'IC NERVES, in anatomy, a pair of very small nerves which arise in the brain, and run to the trochlear muscle of the eye. These nerves have obtained the name *pathetic,* from their serving to move the eyes in the various passions.

PATHOGNOMON'IC, in medicine, a term given to those symptoms which are peculiar to or exclusively characteristic of a particular disease.

PATHOG'NOMY, that science which treats of the signs by which human passions are indicated.

PATHOL'OGY, that branch of medicine which explains the nature of diseases, their causes and symptoms. Its objects are to ascertain the various symptoms which characterize the disorders of each organ of the body, and especially the diagnostic and pathognomonic symptoms, which afford the means of discriminating between diseases that resemble each other; to determine the causes, both predisposing and exciting, by which diseases are induced; and to teach the indications of cure, and the nature and operation of the remedies adapted to the various circumstances and periods of diseases.

PA'THOS, language capable of moving the tender passions, and of exciting the finest emotions of the soul.

PA'TIENCE, the quality of enduring affliction, pain, persecution, or other evil, without murmuring or fretfulness. It may spring from constitutional fortitude, from a noble and heroic pride, or from a pious submission to the divine will.

PA'TIENT, one who is under the direction of a physician, or other medical practitioner, for the cure of any disorder.——*Patient,* in physiology, that which receives impressions from external agents; or whatever is passively affected.

PA'TIN, in the Romish church, the cover of the chalice, used for holding particles of the host.

PA'TRES CONSCRIPTI, a name given to the Roman senators in general, though at first it was applied to a particular part of that body. The hundred appointed by Romulus were called simply *Patres;* a second hundred added by Romulus and Tatius upon the union of their people, were denominated *Patres minorum Gentium;* a third hundred being afterwards added by Tarquinius Priscus, the two latter classes were called *Patres Conscripti,* because they were written down or put upon the list with the original hundred of Romulus.

PA'TRIARCH, properly signifies the head or chief of a family. The name of patriarchs is generally confined to the progenitors of the Israelites who lived before Moses, Abraham, Isaac, Jacob, &c.; or to the heads of families before the flood, as, the antediluvian *patriarchs.* The appellation has from hence been transferred to the bishops of the first churches of the East; as, the patriarchs of Antioch, Alexandria, Jerusalem, Constantinople.——*Patriarchal cross,* in heraldry, a cross appropriated to the dignity of a patriarch, as the triple crown was to that of the pope. The shaft of this cross is twice crossed, the lower arm being longer than the upper one.

PATRI''CIAN, in Roman history, a title given at first to the descendants of the senators whom Romulus created, and called *patres,* "fathers." It was afterwards enjoyed by those who became senators by other channels than that of hereditary claim: but the dignity of the patricians was lessened by the fall of the republic, the civil wars, and the establishment of the imperial dignity.—The word *patrician,* in its general and modern acceptation, signifies noble; senatorial; not plebeian.

PA'TRICK, St., *Order of,* an Irish order of knighthood, instituted by George III. in 1783, which is the only one belonging to Ireland, but it is the most splendid of any.

PA'TRIOT, one who sincerely loves his country, and who, as a proof of that love, exerts his best energies in contributing to his country's welfare. In the Latin of the middle ages, *patriota* signified a native, in contradistinction to *peregrinus,* a foreigner, that is, one who did not enjoy the rights of citizenship. As the native, or citizen, was considered to be attached by his interests to the commonwealth, the word gradually received the meaning of a citizen who loves his country. Like many other words, its true meaning has at times been sadly perverted, or irreverently used. In the tumult

of political agitation, how often is the contemplative observer compelled

"To see a band called *patriot* for no cause,
But that they catch at popular applause!"

PAT'RIOTISM, the love of one's country—the noblest passion that animates the breast of a true citizen, either in defending it from foreign enemies, or in protecting its rights and maintaining its laws and institutions in vigour and purity when assailed by domestic foes.

PATRO'L, in war, a round or march made by the guard in the night-time, to observe what passes, and to secure the peace and safety of a city or camp, or other place. The patrol generally consists of a body of five or six men, detached from a body on guard, and commanded by a serjeant.

PAT'RON, in its most general sense, signifies one that specially countenances and supports another, or lends his aid to advance the interests of some undertaking; as, a *patron* of the fine arts; the *patrons* of a charitable institution, &c.——*Patron (patronus)*, among the Romans, was an appellation given to any person in power, under whose protection a few inferiors put themselves, under certain conditions of obedience and personal service. The persons protected were called *clients*. The duty of the *patrons* was to be their clients' counsellors in difficult cases, their advocates in judgments, their advisers in matters of doubt, and their overseers in all their affairs. *Patron* was also a title conferred on a master who had freed his slave; the relation of patron commencing when that of master expired. The patron was legal heir to his freed-men, if they died intestate, or without lawful issue, born after their freedom commenced. By the Papian law, if a freed-man's fortune amounted to ten thousand sesterces, and he had three children, the patron was entitled to a child's portion.——*Patron*, in the canon and common law, a person who, having the advowson of a parsonage, vicarage, or other spiritual promotion, belonging to his manor, has the gift and disposition of the benefice, and may present to it whenever it becomes vacant.——*Patron*, in the church of Rome, a guardian or saint, whose name a person bears, or under whose protection he is placed, and whom he invokes: or a saint, in whose name a church or order is founded.——*Lay patronage* is a right attached to a person either as founder or as heir of the founder, or as possessor of the see to which the patronage is annexed. *Ecclesiastical patronage* is that which a person is entitled to by virtue of some benefice which he holds.——*Arms of patronage*, in heraldry, are those arms on the top of which are some marks of subjection and dependence.

PATRONYM'IC, a term applied to such names of men and women as are derived from those of their parents or ancestors; as *Tydides*, the son of Tydeus.

PAULI'CIANS, in ecclesiastical history, a branch of the ancient Manichees, so called from their founder, one Paulus, an Armenian. For several centuries they suffered great persecution, and were at length wholly exterminated.

PAUL'S, ST. This beautiful cathedral, built upon an eminence in London, to the north of the Thames, was completed in thirty-five successive years, under one architect, Sir Christopher Wren; one master mason, Thomas Strong; and one bishop of London, Dr. Henry Compton. Its length is 500 feet from east to west; width, 285 feet from north to south; and height, 340 feet. The weight of the ball is 5,600 lbs; and that of the cross 3,360 lbs. The height to the cross from the centre of the floor is 404 feet. The iron balustrade round the church-yard is three furlongs and one-fifth. The old Gothic structure which before occupied this site, was built on the foundation of an old temple of Diana, 610; burnt, 964; rebuilt, 1240, having been 150 years in building; its steeple fired by lightning, 1443; rebuilt, having been in great part burnt down, 1631; and totally destroyed by fire in the conflagration of 1666. The first stone of the present building was laid, June 21, 1675; and it was finished and opened, Dec. 2, 1697; having cost nearly 1,500,000*l*. The building is of Portland stone, in the form of a cross. Two rows of massy pillars divide the interior into a nave and side aisles. The west front towards Ludgate-street has an elevated portico, forming the grand entrance, of twelve Corinthian columns, with an upper portico of eight pillars of the Composite order, supporting a triangular pediment, with an entablature representing, in relief, the conversion of St. Paul. The dome is one of the most remarkable points of sight in the view of London. But the interior decoration of this building does not correspond with its exterior magnificence, although many monuments and statues to the illustrious dead (the work of the last half century) considerably relieve that feeling of vacancy, which its vast unornamented walls excite.

PAU'PERISM.—Pamphlet after pamphlet has been published on this appalling subject, and volume has succeeded volume. Session after session have legislators pathetically doled out their nightly lamentations; while select committees have pondered over the repulsive evidence before them; and "reports," *ad infinitum*, have appeared, detailing the horrors of pauperism, deprecating the enormities of mendicity, and suggesting plans for ameliorating the condition of the poor. Then come commissioners, in all the panoply of judicial and executive authority, to cleanse this Augean stable; and in lieu of the parochial workhouses of former days, and the discretionary power of overseers to afford temporary assistance to the casual sufferer, those huge bastiles, denominated Unions, rear their dismal heads throughout the land; the paupers are consigned to the care of "guardians" destitute of authority, and their pressing necessities left to "relieving officers" unfurnished with the means of

THE CAUSES OF PAUPERISM LIE IN THE CHARACTER OF THE POPULATION, AND THE ONLY REAL PREVENTIVE IS THE IMPROVEMENT OF THE PEOPLE.

administering relief. The tide of wealth rolls on, and luxury is at its height; splendid edifices rise around us, as if at the wand of the magician; the flag of British commerce floats proudly in the breeze; and our waving corn-fields attest the bounty of Him who sends us food in due season. Yet pauperism, unmitigated pauperism, still exists. To what, to whom shall the evil then be attributed? An able cotemporary, whose remarks so entirely coincide with our sentiments that we unhesitatingly adopt them, says, "The pauperism of England is to be attributed, in a great measure, to the reckless and improvident habits of its labouring poor. But the greatest prudence, united with the greatest industry on the part of the poorer classes, will not always save them from want. This is frequently the case in England, where wages are low compared with the expenses of living, so that an ordinary labourer often cannot, in the period of his life when he can do the greatest amount of labour, save any thing against the time of decrepitude or sickness; and the children of suffering parents must suffer with them. The question in regard to such is, By what means shall their present distress be relieved? The economists of the *new school* (as it is sometimes called) say, that they are to be abandoned to starvation. But a doctrine so abhorrent to our nature is only a hideous theory, which cannot enter into the laws or habits of any people until human nature shall be sunk into brutal hard-heartedness. The dictates of religion, conscience, and compassion, enjoin upon us to give relief; and the only questions practically discussed relate to the mode and degree of the assistance to be afforded, and the measures which ought to be adopted for reclaiming such as bring their misery upon themselves by vice and idleness. The two great objects are—remedy of present suffering and prevention of future; and these two objects are very much blended, for it is a great rule so to administer succour as not to encourage idleness or vice. In the case of young subjects of relief, the greatest charity is that which is directed to the forming of good habits, and giving them instruction in useful arts. With older subjects there is very little hope of any great amelioration of character. But even with these, a regard to the influence upon their habits is constantly to be kept in view in administering to their present wants. One essential condition is, that they should be made to labour, and thus contribute, as far as possible, to their own support. As to the sick and infirm, the rest of the community are bound to support them, by a just assessment of the expenses."

PAUSA'NIA, in Grecian antiquity, a festival, in which were solemn games, wherein nobody contended but free-born Spartans. It was instituted in honour of Pausanias, the Spartan general, under whose conduct the Greeks overcame Mardonius, in the celebrated battle at Platæa.

PAUSE, a character of time in music, marked thus 𝄐, denoting that the note over which it is placed is to be drawn out to a greater length than usual, or to be embellished with appoggiatures, shakes, or other graces.

PAVAN', a grave and formal dance among the Spaniards. In this dance the performers wheel round before each other, the gentlemen dancing with cap and sword, princes in their robes, and the ladies with long trains; the motions being slow and stately.

PA'VEMENT, a floor or covering consisting of stones, bricks, or other suitable material, laid on the earth in such a manner as to make a hard and convenient surface for horses, carriages, or foot-passengers.—Pavements of lava, with elevated side walks, are found at Herculaneum and Pompeii; but the oldest paved city of which there is any account, is that of Cordova, in Spain, which was paved with stones so early as the middle of the ninth century. London, it is said, was not paved till the 12th century, and then only very partially; nor was it until five more centuries had passed away that this kind of street accommodation was by any means general. But now—thanks to the spirit of improvement—we have granite flag-stones of huge dimensions, and asphaltic surfaces of all qualities, for the humble pedestrian; while our carriages silently glide along on pavements made of wood! In short, hosts of patriotic paviors are in full action to facilitate the progress of their fellow-citizens; and metropolitan companies, wooden and asphaltic, are every day starting into existence, with the laudable intention of *mending our ways*.—As these novel modes of paving the streets are every day coming more into use, and as it is not improbable that ere long a great change will be effected by some of the parties engaged in this work of rivalry, we think it desirable to insert an account of the various experiments which were made in Oxford-street, in January, 1839. The whole space between Charles-street and Tottenham-court-road was occupied by twelve different specimens, which were completed in the following order, commencing at Charles-street, viz., 40 feet of Robinson's Parisian bitumen, 24 feet laid in straight courses, and 16 feet diagonally; 74 feet of parish stone paving, 54 feet of which was laid in straight courses, the stones nine inches deep, and the interstices filled up with Claridge's asphalte, the remaining 20 feet consisting of stones only 4½ inches deep, but laid diagonally, and filled up with the same composition; 60 feet of the Bastenne Gaujac bitumen, part laid in straight courses, and part diagonally; 135 feet of parish stone paving, divided into three sections in the following order: 1st, 70 feet of dressed Aberdeen granite, with concrete bottom, and the joints grouted with lime and sand; 2nd, 40 feet of the same laid diagonally; and 3rd, 25 feet of dressed Aberdeen granite, without concrete bottom, the joints filled in with fine gravel; this was followed by 50 feet of the Scotch asphaltum, entirely the produce of this country, laid down in straight courses; 60 feet of Mr. Stead's pavement of wooden blocks of a

sexagonal form, 12 inches deep, divided into three compartments—one prepared with Kyan's patent, part dipped in, and joints run with asphalt, and part without any preparation whatever; the last specimen, at Tottenham-court-road, was 60 feet of the Val de Travers bitumen, a portion of which consisted of square blocks laid in straight courses, and the remainder of a layer of clean Guernsey chippings, cemented together by boiling asphalt run among them nearly to the surface, a face made with asphalt, merely showing the chippings here and there in patches. The whole work presented a most even and beautiful road. The portion, however, to which attention was more particularly directed, was that of the wooden blocks, the noiseless tendency of which made the vehicles passing along appear to be rolling over a thick carpet. It may be necessary to add, that several other methods of constructing and laying down the wooden pavement have recently been tried in different parts of the town with still greater success. Some of these are on the principle of fastening the blocks to each other by equal angular pressure; others are held together by pegs and grooves, the object of each being to avoid all danger from slipperiness and displacement of the blocks; while, from their being cut from the trunks of trees and laid with the grain uppermost, their durability appears unquestionable.

PAVILION, in architecture, a kind of turret or building, usually insulated and contained under a single roof; sometimes square, and sometimes in form of a dome. Sometimes a pavilion is a projecting part in front of a building; sometimes it flanks a corner.——In military affairs, a tent raised on posts. The word is also sometimes used for a flag, ensign, or banner.

PAVO, in astronomy, a constellation in the southern hemisphere, consisting of fourteen stars. [For *Pavo*, the systematic name of the Peacock, see the latter word.]

PEA, in botany, a plant and its fruit, of the genus *Pisum*, of many varieties. It has been cultivated from remote antiquity, and forms one of the most valuable of culinary vegetables, being nutritious, especially when green, in which state they form an agreeable article of food to most persons. This plant has a papilionaceous flower, and the pericarp is a legume, called in popular language a *pod*. They are sometimes ground into flour, and mixed with that obtained from wheat, but the bread is thereby rendered heavy and unwholesome. In the plural we write *peas* for two or more individual seeds, but *pease* for an indefinite number in quantity or bulk.

PEACE, in a general sense, signifies a state of tranquillity, or freedom from disturbance. In a political sense, freedom from war with a foreign power, or from internal commotion. It likewise denotes a calm and tranquil state of the mind, which is the effect of a clear conscience. Also that quiet, order, and security which is guaranteed by the laws. This latter is termed the *peace of the king*, and consists in that peace or security, both of life and goods, which the sovereign promises to all his subjects, or others who are under his protection: such is the peace of the king's highways, which consists in the freedom from all annoyance and molestation; to which may be added the peace of the plough, whereby both the plough and plough cattle are secured from distress warrants.

PEACH, in botany, a tree and its fruit, of the genus *Amygdalus*, of many varieties. It belongs to the natural family *rosaceæ*: the leaves are alternate, simple, lanceolate, acute, and finely serrated: the flowers appear before the leaves, are very beautiful, and diffuse an agreeable odour. The fruit is a large downy drupe, containing a stone which is deeply furrowed and rough externally, which character distinguishes it both from the almond and the apricot. It is, perhaps, the most exquisite of the fruits of temperate climates, and, if not eaten to excess, one of the most wholesome. It originally came from Persia, but it was not introduced into England till about the year 1560.

PE'ACOCK, in ornithology, a large and beautiful fowl of the genus *Pavo*, originally a native of India. The name properly belongs to the male of the species, but it is popularly applied to the species in general; though the female is, for distinction's sake, called a *peahen*. Like other domesticated birds, the peacock exhibits several varieties. The ordinary length of this splendid bird, from the tip of the bill to that of the full-grown, fan-expanded tail, is about four feet. The female is rather less; and her train is not only very short, but destitute of those brilliant hues and striking beauties which adorn the male: her crest too is shorter, and her whole plumage partakes of a cinereous hue. When pleased or delighted, the peacock erects his tail, unfolds his feathers, and frequently turns round, as if to catch the sunbeams in every direction, accompanying this movement with a hollow murmuring. At other times his cry is very disagreeable, and often repeated, especially before rain. Every year he sheds his plumes, and courts the most obscure retreats till the returning spring renews his lustre.——The *Peacock Pheasant*, or *Thibet Peacock*, which inhabits China and the mountains that separate Thibet from Hindostan, is a singularly elegant bird, rather larger than the common pheasant. The tail is composed of two distinct ranges of long feathers, the undermost being the true tail. These feathers are capable of being erected and displayed like a fan when the bird is agitated, but at other times they remain in a horizontal position.

PEA'COCK-FISH, in ichthyology, a fish found in the Indian seas, the body of which is of an elliptical form, and the colours so richly marked and agreeably mixed, that they resemble the elegance of the peacock's tail.

PEAR, in botany, the fruit of the *pyrus domestica*, a tree growing wild in many

parts of Europe; but of which many kinds are cultivated in all temperate climates.

PEARL, in natural history, a hard, white, shining body, usually of a globular, but sometimes of a pear-shape, found in a testaceous fish commonly called the pearl-oyster, and esteemed a gem of high value. They are found in some parts of the globe in clusters of a great number, on rocks in the depths of the sea: and such places are called *pearl banks*. Some naturalists consider pearls to be unfructified eggs; others describe them as mere concretions of the juice of which the shell has been formed, and with which the animal annually augments it. Reaumur remarks, that no one who is in the least degree acquainted with the composition of animal bodies, is ignorant that their juices are capable of producing hard substances; and he justly observes, that it is far from extraordinary that a fish which has a sufficient quantity of stony juice to build, thicken, and extend a shell, should have enough to form these stones, if it happen to overflow, or burst into any cavity of the body, or among the membranes. The seas about the East-Indies and America yield pearl-fish in great abundance; and they are found with good pearls in several parts of Europe. In the east, the coasts of the island of Ceylon and the Persian gulf are the parts most celebrated for pearl fisheries; and in the west, the coast of Terra-firma and the gulf of Mexico. The European pearls are chiefly found on the coast of Scotland and in a river of Bavaria.——*Pearl-fishing in the East-Indies.* This occupation employs a considerable number of persons at two seasons of the year. The first is in March and April, and the second in August and September. Each bark puts off from the shore at sunrise, with a land breeze which never fails, and returns to the shore at noon, with a sea breeze by which it is succeeded. To collect the shells is the business of divers, brought up to the dangerous occupation from early youth. They descend from their boat with a rope fastened round their body, and a stone of 20 or 30lbs. weight attached to the foot to sink them. Generally they have to descend from eight to twelve fathoms before they reach the shells. Their nostrils and ears are stopped up with cotton; to the arm a sponge, dipped in oil, is fastened, which the diver now and then brings to his mouth, in order to draw breath without swallowing water. Every diver has, besides, a knife to loosen the shells, and a little net or basket to collect them. When he has filled this, or is unable to stay any longer under water, he quickly unfastens the stone, shakes the line, and is drawn up by his companions. There are others, however, who use the diving-bell. The shells thus obtained are put into vessels, where they remain till the body of the animal putrefies, when they mostly open of themselves. Those which contain any pearls have generally from eight to twelve. After being dried they are passed through nine sieves of different sizes. The worth of a pearl is in proportion to its magnitude, round form, polish, and clear lustre. Sometimes, but very rarely, a pearl is found as large as a nutmeg. When the pearls are only about the size of small shot they are denominated *seed* pearls, and are of little value. One of the most remarkable pearls of which we have any authentic account was bought by Tavernier, at Catifa, in Arabia, a fishery famous in the days of Pliny, for the enormous sum of 110,000*l*. It is pear-shaped, regular, and without blemish; it is from two to three inches long, and nearly one inch in diameter. Even in antiquity pearls were an object of luxury. One, worth about 84,000*l*. of our money, Cleopatra is said to have dissolved at a banquet and drank off to Antony's health.——*Artificial pearls* are small globules or pear-shaped spheroids of thin glass, perforated with two opposite holes, through which they are strung, and mounted into necklaces, &c., like real pearl ornaments. The liquor employed to imitate the pearly lustre is called *essence d'orient*, which is prepared by throwing into water of ammonia the brilliant scales, or rather the lamellæ, separated by washing and friction of the scales of the blay, a small river-fish. There are various other methods of imitating pearls, in which the French are said to excel.

PEARL'-ASH, a kind of fixed alkaline salt, prepared chiefly in America, Germany, Russia, and Poland, by melting the salts out of the ashes of burnt wood; and, having again reduced them to dryness, evaporating the moisture, and calcining them for a considerable time in a furnace moderately hot. Pearl-ashes are much used in the manufacture of glass, and require no preparation, except when very great transparency is required.

PEAT, a congeries of vegetable matter, in which the remains of organization are more or less visible; consisting of trunks of trees, of leaves, fruits, stringy fibres, and the remains of aquatic mosses. It occurs in extensive beds, called *peat-mosses*, occupying the surface of the soil, or covered to the depth of a few feet with sand, gravel, &c. It is the common fuel of large districts of Wales and Scotland, and of some parts of England where coals are very dear. Lord Willoughby de Eresby has lately perfected a peat-compressing machine, first produced by him in 1837. In some experiments which took place at the manufactory of Mr. Napier, the engineer, specimens of peat that had been pressed two days previously, were shown to be perfectly dry, heavy, and consistent; and some that had been preserved for a year were scarcely to be distinguished from coal. As fuel for the manufacture of the finest cutlery, this peat is superior to coal, probably from being without sulphur. It can always be obtained by the lowly population of a large portion of the British empire with infinitely less cost of labour and time than the mere cutting and drying of turf or peat. It may also be advantageously employed in lime-burning, and in

PHILIP II. OF SPAIN HAD A PEARL, PERFECT IN ITS SHAPE AND COLOUR, AND OF THE SIZE OF A PIGEON'S EGG, VALUED AT 80,000 DUCATS.

PEARLS WERE FORMERLY USED IN MEDICINE; BUT THEIR MEDICAL OPERATION IS NOT DIFFERENT FROM THAT OF ANY OTHER CALCAREOUS EARTH.

fires or furnaces, working machinery, or raising of steam.

PEB'BLES, in mineralogy, a genus of fossils, defined to be stones composed of a crystaline matter debased by earths of various kinds in the same species, and then subject to veins, clouds, and other variegations, usually formed by incrustation round a central nucleus, but sometimes the effect of a simple concretion.

PEC'ARY, or PEC'CARY, in zoology, a South American quadruped, in general appearance resembling a hog, but with a body less bulky, shorter legs, and bristles thick and strong, like the quills of the porcupine. Its colour is black and white, and on the hind part of its back there is a small orifice from which issues a liquor of a strong and disagreeable odour.

PECH'BLEND, or PITCH'BLEND, in mineralogy, ore of uranium; a metallic substance of a blackish or deep iron-gray colour, sometimes spotted with red: it is found in masses in Swedish and Saxon mines, and is generally stratified with other minerals.

PECK, a dry measure of eight quarts, being the fourth part of a bushel.

PEC'ORA, in zoology, an order of animals in the Linnæan system, under the class mammalia, comprehending such as have cloven hoofs, live on grass, chew the cud, and have four stomachs; as, the antelope, the camel, camelopard, stag, sheep, ox, cow, &c.

PEC'TEN, in conchology, a genus of bivalve shells, shutting close all round, and usually of a depressed form; but having one or two processes, called ears, issuing from the head of the shell near the hinge. ——The greater part of the pectens are striated; the ribs or ridges running in straight lines like the teeth of a comb; whence the name.

PEC'TINATED, or PEC'TINATE, in botany, an epithet for a sort of pinnate leaf, in which the leaflets are toothed like a comb.——A mineral is said to be *pectinated*, when it presents short filaments, crystals, or branches, nearly parallel and equidistant.

PEC'TORAL, an epithet for whatever relates to the breast: hence, *pectoral* medicines are those which relieve diseases of the breast or lungs, &c.

PEC'ULATOR, one who defrauds the public by appropriating to his own use money entrusted to his care.

PECU'LIAR, in the canon law, a parish or church that has jurisdiction within itself, and is competent to the granting probates of wills and letters of administration, exempt from the ordinary or bishop's court. ——*Court of Peculiars*, a branch of the court of arches, belonging to the archbishop of Canterbury, which takes cognizance of matters relating to parishes that have a peculiar jurisdiction.

PED'ALS, in music, the keys played by the feet (hence the name), by which the deepest bass pipes of an organ are put in motion. A *pedal* is also used under a piano, in order to strengthen and prolong the tones. In a harp, the pedal serves to elevate the notes half a tone.

PED'ATE, in botany, an epithet applied to a leaf in which a bifid petiole connects several leaflets on the inside only.

PED'ATIFID, in botany, an epithet for a leaf whose parts are not entirely separate, but connected like the toes of a water-fowl.

PED'ESTAL, in architecture, the lowest part of a column, being that which serves as its stand. It consists of three parts, viz. a trunk or dye, which forms the body; a cornice, the head; and a base, the foot of the pedestal.

PED'ICLE, in botany, the ultimate division of a common peduncle; the stalk that supports one flower only when there are several on a peduncle.

PEDIC'ULUS, in entomology, the louse, a genus of insects of the order *Aptera*. Some of the insects of this genus, of which there are seventy or eighty species, infest the bodies of quadrupeds, some infest birds, some insects, besides which there is the *Pediculus humanus*.

PED'IMENT, in architecture, a kind of low pinnacle serving to finish a frontispiece, and which finishes the fronts of buildings, or is placed as an ornament over gates, doors, windows, or niches. The pediment is ordinarily of an angular form, but sometimes it forms the arc of a circle. The parts of a pediment are, 1. the tympanum; 2. the cornice, which crowns it; and 3. the entablature, which serves it as a base or scale.

PEDOBAP'TIST, or PÆDOBAP'TIST, one that holds to the practice of infant baptism. Most denominations of Christians are, in fact, pædobaptists.

PEDOM'ETER, in mechanics, an instrument by which paces are numbered, and the distance from place to place ascertained. It also marks the revolutions of wheels. This is done by means of wheels with teeth and a chain or string fastened to the foot or to the wheel of a carriage; the wheels advancing a notch at every step or at every revolution of the carriage wheel.

PEDUN'CLE, in botany, the stem or stalk that supports the fructification of a plant, and of course the fruit. A *pedunculate* flower is one which grows on a peduncle.

PEER, a nobleman or peer of the realm. The lords of parliament are the peers of each other; for whatever formality of precedence may attach to the title of duke, earl, marquis, or viscount, it is a *barony* which conveys the right to a seat in parliament, and confers every privilege annexed. It is as a baron, not as a duke, bishop, &c. that a peer sits in parliament; and the parliamentary rights are, at the present day, the essence of nobility. In compliance with an ancient practice, peers are sometimes still created by titles which convey the idea of local rights to which they have in reality no pretension; but though this is a mere form, the rank they gain is not an empty

THE FRENCH PEERAGE WAS ABOLISHED BY THE REVOLUTION; BUT LOUIS XVIII. RE-ESTABLISHED IT UPON THE MODEL OF THE ENGLISH, IN 1814.

one: it is that of an hereditary legislator of the realm. A peer is not to be put upon any inquest, even though the cause have a relation to two peers; and where a peer is defendant in a court of equity, he is not to be sworn to his answer, which is to be received upon the faith of his honour; but when he is to answer to interrogatories, or to make an affidavit, or to be examined as a witness, he is to be sworn.——*Trial of a Peer.* It is a maxim of the first importance, that those public men who, in a free country particularly, will always be liable to the dangers of political animosity, should be secured against possible popular injustice; and for this reason, as well as because, with the rest of his fellow subjects, he claims to be tried by his equals, a temporal peer must be arraigned, whether on a charge of treason or of felony, before the house of which he is a member. On occasion of such a trial, all the lords, with the exception of the bishops, are to be summoned at least twenty days previous to its commencement. The course of proceeding is as follows: after the indictment is allowed, the sovereign, by commission under the great seal, appoints one of the peers, and usually the chancellor, to be high steward, who sits as judge. To bring the indictment before the lord high steward, a writ, called a *certiorari*, is issued out of the court of chancery and the prisoner is brought by another writ. The high steward assigns a day and place of trial; and twelve of the peers *must* be present. At the time and place appointed, the high steward being seated in the customary state, the royal commission read, and other ceremonies performed, he declares to the prisoner at the bar the cause of the assembly, assures him of justice, and encourages him to answer without fear to the charge that is to be preferred against him. The indictment is then read and the prisoner arraigned. After the evidence for the prosecution and the answer have been heard, the prisoner is ordered to withdraw from the bar, and the lords retire, in the manner of a common jury, to deliberate on their verdict. On their return, the high steward openly demands of each lord whether the prisoner, calling him by his name, be guilty of the crime for which he is arraigned? and each lord, laying his right hand upon his left breast, separately answers, "Guilty," or "Not Guilty, upon my honour." If, by a majority of votes, the prisoner be found guilty, he is brought to the bar again, and the high steward acquaints him with the verdict of his peers, and passes sentence and judgment accordingly; or acting as he does by commission, the high steward may take time to advise upon the judgment and his office continues till that be passed. The appointment of a high steward only takes place when the parliament is not sitting. If the trial occurs during the session, it is said to be in the *high court of parliament;* the peers officiate at once as jurors and judges, and their speaker collects the votes: when the parliament is not sitting, the trial is said to be in the court of the *high steward of England.* There are two peculiarities attending the trial of a peer: 1st. the number of jurors is greater than ordinary, every peer having a right to sit; 2ndly. unanimity is not required, but the decision depends upon the majority, which, however, must amount to twelve.

PEER'ESS, a woman who is noble by descent, creation, or marriage. If a peeress by descent or creation marries a person under the degree of nobility, she still continues noble; but if she has obtained the dignity by marriage only, by a subsequent marriage with a commoner she loses it; though, by the courtesy of England, she always retains her title.

PEG'ASUS, in astronomy, a constellation in the northern hemisphere. It derives its name from *Pegasus*, the winged horse, which, according to the Greeks, sprung from the blood of the Gorgon Medusa, after Perseus, a son of Jupiter, had cut off her head.

PELA'GIANS, a Christian sect who appeared about the beginning of the fifth century. Pelagius, the founder of it, was born in Wales, and his real name was Morgan, which in the Welsh language signifies *sea born;* whence the Latin name Pelagius. Some of our ancient historians pretend that he was abbot of Bangor; but this is impossible, because the British monasteries were of a later date. St. Austin gives him the character of a very pious man, and a person of superior birth. Among other tenets of belief, the Pelagians denied original sin, maintaining that Adam would have died, whether he had sinned or not; while they asserted the doctrine of free will, and the merit of good works.

PELECA'NUS, in ornithology, the generic term in the Linnæan system for the sort of birds of which the pelican is the principal species: it comprehends also the cormorant or corvorant, the man-of-war bird, and the gannet.

PEL'ICAN, a bird larger than a swan, inhabiting marshy and uncultivated places, particularly islands and lakes where sedges abound. The bill is straight, except at the point, and it has a skin reaching down the neck, which forms a pouch capable of being distended so as to hold many quarts of water. The pelican has a peculiar tenderness for its young, and feeds them with fish that have been macerated for some time in her pouch: hence has arisen the fabulous story of its feeding them by drawing blood from the parent breast. They are gregarious, very fond of fish, and when harassed or pursued, readily reject the contents of their stomach, like the gull tribe. ——*Pelican*, in chemistry, a kind of double glass vessel, or alembic, used in distilling liquors by circulation. It is designed for continued distillation and cohobation.

PELLA'GRA, in medicine, the name given to a disease, or complication of diseases, common to the inhabitants of the Lombardo-Venetian plains. It begins by an erysipelatous eruption of the skin, and is accompanied by remarkable lassitude,

melancholy, moroseness, and hypochondriasis, with an evident propensity to suicide. As the disease advances it assumes various forms of mania, and the wretched sufferer generally endures the extremity of torture before death closes the sad scene. It is almost confined to the agricultural population and the poorest classes.

PEL'LICLE, the thin and skin-like substance found in egg-shells and other animal productions.——Among chemists, it signifies a thin saline crust formed on the surface of a solution of salt evaporated to a certain degree, and which consists of saline particles crystalized.

PEL'LITORY, in botany, the name of several plants of different genera. Of these the *pellitory of the wall*, or common pellitory, of the genus *Parietaria*, is the principal. The *bastard pellitory* is of the genus *Achillea*.

PELLS, Clerk of the, an officer of the English exchequer, who enters every teller's bill on the parchment rolls, the roll of receipts, and the roll of disbursements.

PELO'RIA, a Thessalian festival, not unlike the Roman saturnalia.

PELT, a raw hide, or skin of a beast with the hair on it.

PEL'TA, in antiquity, a small, light, and manageable buckler. Among others, the Amazons are particularly mentioned as having used it.

PELTATE, in botany, having the shape of a target or round shield, as a *peltate* stigma; having the petiole inserted in the disk, as a *peltate* leaf.

PEN, an instrument used for writing, made either of the quill of some large fowl, of metal, or of any other material. In ancient times reeds were split and shaped to a point similar to our pens, but quills are not supposed to have been used for writing with till the sixth century. As pens, however, have now become an important branch of manufacture, a short account of them may not be uninteresting. England is chiefly supplied with quills from Russia and Poland, where immense flocks of geese are fed for the sake of their quills; and about twenty millions are annually imported into England from these countries. The preparation of quills, or *touching* as it is called, is a curious and nice process. They are first moistened, not by immersion, but by dipping their ends into water and allowing the remaining parts to absorb moisture by capillary attraction. They are then heated in the fire or in a charcoal burner, and are passed quickly under an instrument with a fine edge, which flattens them in such a manner as to render them apparently useless. They are next scraped, and again exposed to the heat, when they are restored to their original form. After this preparation they are cut into pens by means of the pen-cutter's knife, and are also trimmed. A pen-cutter will make about 800 in a day. Metallic pens appear to have been first introduced as rewards for merit, but steel pens for writing were first made by Mr. Wise, in 1803, and were fashioned like pens made of quills. A patent was taken out in 1812, for pens with flat cheeks, and in this way all metallic pens were made for some time, as the rhodium pen of Dr. Wollaston, and the iridium pen of others. About the year 1824, Mr. Perry began to make pens, and six years after they were manufactured at Birmingham. The steel is pressed into thin sheets by a rolling press. It is then cut into slips, annealed for fourteen hours, and again passed under the roller. By means of a peculiar cutting-machine the pens are formed in a falchion shape. The preparation for forming the slit then takes place. An extremely fine-edged chisel is brought down upon each separately, and is allowed to penetrate two-thirds through its substance. The edge of this instrument is finer than any razor, but is much harder, as it does not require to receive an edge during the whole of the day. This superior quality is given to the steel by beating it for several hours with a hammer. It is an important fact, and appears to have been discovered by the pen-manufacturers. A triangular piece is next cut out at the upper end of the slit in the pen, which is called *piercing*. The next object is to give them their proper shape, which is effected by means of a punch fitting into a corresponding concavity. The pens are then heated red hot and dipped into oil, which must be at least three feet deep. The oil in a few weeks loses its properties and becomes charred. The next operation is polishing. This is effected in a peculiar apparatus, called, emphatically, the *devil*, consisting of a fly-wheel and box, in which the pens are placed, and to which a motion is given, resembling that required in shaking together materials in a bag. This motion is continued for eight hours, when the pens are found to be completely deprived, by the friction against each other, of any asperities which might have existed on their edges, and though not visible to the naked eye, would have obstructed the free motion of the pen in writing. After this they are tempered in a box, shaken and brought to a blue colour, being carefully watched, and the heat lessened whenever a shade of yellow is observed on their surface. The split is now completed by touching its side with a pair of pincers. The total quantity of steel employed in this country for making pens amounts to 120 tons, which is equivalent to about two hundred millions of pens. While we allow that much ingenuity has been shown in the construction of steel pens, and many improvements effected in their manufacture (for they were wretched things at first), we still think them, at best, but very indifferent substitutes for those made from the quills of geese.——*Fountain-pen*, is a pen made of silver, or other metal, so contrived as to contain a considerable quantity of ink, which, flowing out by gentle degrees, supplies the writer a long time without his being under the necessity of taking fresh ink.

PE'NAL LAWS, laws made for the punishment of criminal offences.

A POEM ON A PEN, WRITTEN IN THE SEVENTH CENTURY BY ADHELM, THE FIRST SAXON WHO WROTE IN LATIN, IS STILL IN EXISTENCE.

PEN'ALTY (in law), a fine or forfeiture by way of punishment, which is a *pecuniary* penalty; but the word *penalty* is not confined to this; for imprisonment, whipping, transportation, &c. are equally penalties, though in the shape of personal punishments.

PEN'ANCE, in ecclesiastical law, the infliction of some pain or bodily suffering, as fasting, flagellation, &c.; as an exercise of repentance for some sin, either voluntary or imposed.——*Penance* is one of the seven sacraments of the Romish church.

PENA'TES, in Roman antiquity, tutelar deities, either of countries or of particular houses, in which last sense they were the same with the *lares*. The Penates were originally the tutelar gods of the Trojans; but being adopted by the Romans, they were thus named.

PEN'CILS, or BLACK LEAD PENCILS, as they are usually called, are formed of carburet of iron or plumbago, with a point at one end, used for writing or drawing. Since the introduction of the "ever-pointed pencils," in their ingeniously constructed cases, it is said that the manufacture of pencils in cedar-wood has decreased to an almost incredible extent; but it is still by no means inconsiderable or unimportant.——*Pencil of rays*, in optics, a number of rays diverging from some luminous point, which, after falling upon and passing through a lens, converge again on entering the eye.——*Pencil*, a small brush used by painters for laying on their colours. Pencils are of various kinds, sizes, and materials; the larger sorts are made of swine's bristles, the thick ends of which are bound to a stick or handle, and when large are called brushes. The finer sorts are made of the hair of camels, badgers, and squirrels, and of the down of swans; these are tied at the upper end, and inclosed in a quill. All such, when good, on being drawn between the lips come to a fine point.

PEN'DANT, a long narrow flag or streamer, displayed from a ship's mast head, usually terminating in two points. It denotes that a ship is in actual service. The *broad pendant* is a flag that serves to distinguish the chief of a squadron.——The *rudder pendant* is a rope made fast to the rudder by a chain, to prevent the loss of the rudder when unshipped.——In heraldry, a part hanging from the label, resembling the drops in the Doric frieze.——Also, an ornament or jewel hanging at the ear.

PEN'DULUM, in dynamics, a ponderous body, so suspended that it may vibrate, or swing backward and forward, from some fixed point, or axis of suspension. The vibrations of a pendulum are called its oscillations, and depend on the force of gravity. From the precision of its motions, it is employed in measuring time and space. The distance of a ship, from which a gun is fired, may be ascertained by measuring the interval of time between the flash and the sound of a gun; and, upon the same principle, the distance of a cloud, by numbering the seconds or half seconds between the lightning and the thunder: thus, supposing that between the lightning and thunder ten seconds are counted, it follows (sound passing through 1142 feet in a second) that the distance of the cloud is 11,420 feet. Height also, as the height of a room, may be measured by a pendulum vibrating from its top; and by the same instrument, the force of gravity on the various parts of the earth's surface is discovered. The origin of the pendulum is traced to Galileo's observation of a hanging lamp in a church at Pisa continuing to vibrate long and with singular uniformity, after any accidental cause of disturbance. Hence he was led to investigate the laws of the phenomenon, which led to results in the highest degree important. A common clock, as Dr. Arnott observes, is merely a pendulum, with wheel-work attached to it, to record the number of the vibrations; and with a weight or spring, having force enough to counteract the retarding effects of friction and the resistance of the air. The wheels show how many swings or beats of the pendulum have taken place, because at every beat, a tooth of the last wheel is allowed to pass. Now, if this wheel has sixty teeth, as is common, it will just turn round once for sixty beats of the pendulum, or seconds; and a hand fixed on its axis, projecting through the dial-plate, will be the second hand of the clock. The other wheels are so connected with this first, and the numbers of the teeth on them so proportioned, that one turns sixty times slower than the first, to fit its axis to carry a minute hand; and another, by moving twelve times slower still, is fitted to carry an hour-hand.

PENETRA'LE, was a sacred room or chapel in private houses, set apart for the worship of the household gods among the Romans. In temples also there were *penetralia*, or apartments of particular sanctity, where the images of the gods were kept, and certain solemn ceremonies performed.

PEN'GUIN, in ornithology, a genus of fowls of the order of *Palmipedes*. The penguin is found only in southern latitudes, and has very remarkable peculiarites. It is an aquatic fowl, with very short legs, with four toes, three of which are webbed; the body is clothed with short feathers, set as compactly as the scales of a fish; the wings are small, like fins, and covered with short scale-like feathers, so that they are useless in flight. When on land, penguins stand erect; they are tame, and may be driven like a flock of sheep; but they seldom go on shore, except in the breeding season, when they burrow in the earth. In water they swim with rapidity, their fin-like wings greatly assisting them.

PENIN'SULA, a part of a continent almost surrounded by the sea, except where it joins the main land by a narrow neck called an *isthmus*. In Europe it is common to designate Spain and Portugal by the appellation of *the peninsula*; and when we speak of the contest maintained by the British and native troops against the French, we accordingly term it the *peninsular war*.

A PENDULUM, ONCE PUT IN MOTION, WOULD NEVER CEASE TO OSCILLATE IN ARCS, WERE IT NOT FOR FRICTION AND THE RESISTANCE OF THE AIR.

THE NEW PENITENTIARY FOR THE RECEPTION OF CONVICTS AT MILBANK, WESTMINSTER, WAS COMPLETED, AND CONVICTS REMOVED TO IT, JUNE, 1816.

PENITEN'TIARY, in the ancient Christian church, a name given to certain presbyters, appointed in every church to receive the private confessions of the people, in order to facilitate public discipline, by acquainting them what sins were to be expiated by public penance, and to appoint private penance for such crimes as it might be deemed unadvisable to censure publicly. ——*Penitentiary*, at the court of Rome, an office in which are examined and delivered out the secret bulls, graces, or dispensations relating to cases of conscience, confessions, &c.——The title of *penitentiary* was also given to an officer in some cathedrals, who was vested with power from the bishop to absolve in cases reserved to him. ——*Penitentiary*, the name of some prisons in England where felons are kept to hard labour.

PEN'ITENTS, an appellation given to certain fraternities in Catholic countries, distinguished by their different habits, and generally employed in charitable acts.

PEN'NON, in heraldry, a small pointed flag, borne by a gentleman. When knighthood was conferred upon him, the point was cut off, and the square flag that remained bore the name of *banner*.

PEN'NY, an ancient silver coin, which was the only coin current among our Saxon ancestors; but now a copper coin, twelve of which are equal to a shilling. In Etheldred's time the penny was the 20th part of an ounce troy, hence the denomination *pennyweight*. Till the time of Edward I. the penny was struck with a cross so deeply sunk into it that it might, if required, be easily broken, and parted into halves and quarters; hence the terms *half-pence*, and *farthings* or *quadrantes*.

PEN'NYWEIGHT, a Troy-weight, containing 24 grains, each of which is equal in weight to a grain of wheat gathered out of the middle of the ear, and well dried.

PEN'SION, an annual allowance of a sum of money to a person by government, in consideration of past services, civil or military; or, at least, such a pension ought to be.

PEN'SIONER, one who receives an annuity from another, whether in consideration of service past or present, or merely as a benevolence.——In the universities of Cambridge and Dublin it denotes an undergraduate or bachelor of arts who lives at his own expense.——*The Band of Gentlemen Pensioners*, who attend on the British sovereign, was instituted by Henry VII., and their duty is to guard the royal person when at home; for which each receives a pension or annual allowance of 100*l*.——*Pensions of the Inns of Court*, annual payments made by each member to the society.

PENTACAP'SULAR, in botany, an epithet for a plant having five capsules or seed-vessels.

PEN'TACHORD, a musical instrument with five strings.

PENTACH'RINITE, the fossil remains of a zoophite.

PENTACHROS'TIC, a set of verses so disposed as to have five acrostics of the same name in five divisions of each verse.

PEN'TACOCCOUS, in botany, an epithet implying that the plant has five united cells with one seed in each.

PEN'TAGON, in geometry, a figure having five sides and five angles. If the five sides are equal, the angles are so too, and the figure is called a regular pentagon —— In fortification, a fort with five bastions.

PEN'TAGRAPH, an instrument for drawing figures in any proportion at pleasure, or for copying or reducing a figure, plan, print, &c. to any desired size.

PENTAGYN'IA, in botany, an order of plants in the Linnæan system, comprehending such as have five pistils in an hermaphrodite flower.

PENTAHE'DRON, in geometry, a figure having five equal sides.

PENTAHEXAHE'DRAL, in crystalography, exhibiting five ranges of faces one above another, each range containing six faces.

PENTAM'ETER, in Latin and Greek poetry, a verse consisting of five feet or metres. The two first may be either dactyls or spondees; the third is always a spondee, and the two last anapests. A pentameter verse subjoined to an hexameter constitutes what is called *elegiac*.

PENTAN'DRIA, in botany, the fifth class of the Linnæan system, containing those plants which have hermaphrodite flowers with five stamens, viz. the orders, *monogynia, digynia, trigynia, tetragynia, pentagynia, decagynia*, and *polygynia*.

PENTAN'GULAR, in geometry, having five corners or angles.

PENTAPET'ALOUS, an epithet given to flowers that consist of five petals or flower-leaves.

PENTAPH'YLLOUS, in botany, consisting of, or having five leaves.

PEN'TARCHY, a government in the hands of five persons.

PEN'TASTICH, in poetry, a composition consisting of five verses.

PEN'TASTYLE, in architecture, a building in which there are five rows of columns.

PEN'TATEUCH, an appellation given to the first five books of the Old Testament, viz. Genesis, Exodus, Leviticus, Numbers, and Deuteronomy.

PENTATH'LUM, or PENTAT'HLON, in antiquity, a general name for the five exercises performed at the Grecian games, namely, wrestling, boxing, leaping, running, and playing at the discus.

PENTECON'TER, in antiquity, a Grecian vessel of fifty oars; smaller than a trireme.

PEN'TECOST, a solemn festival of the Jews, instituted in memory of the promulgation of the law, and so named because that event took place on the fiftieth day after their departure from Egypt. It is retained in the Christian church (and by us called Whitsuntide) on account of the miraculous descent of the Holy Ghost on the apostle, which happened on one of the annual returns of its celebration.

PENNY, IN ANCIENT STATUTES, IS USED FOR ALL SILVER MONEY: HENCE THE WARD-PENNY, HUNDRED-PENNY, TITHING-PENNY, AND AVER-PENNY.

PENULTIMA, PENULT', or PENULT'IMATE SYLLABLE, in grammar, the last syllable but one of a word; and hence the *anti-penultimate* syllable is the last but two, or that immediately before the penultima.

PENUM'BRA, in astronomy, a partial shade or obscurity observed between the perfect shadow, where the light is entirely intercepted, and the full light in an eclipse, arising from the magnitude of the sun. Penumbras must be constant attendants of all eclipses, whether of the sun or moon, or planets primary or secondary.

PEP'PER, a plant and its seed, of the genus *Piper*. The leaves of the pepper tree are oval, the flower white, and the fruit is an aromatic, dry, and hot berry. We have three kinds of pepper; the white, the black, and the long. Black pepper *(piper nigrum)* is the fruit of a shrub of the creeping kind, growing in Java, Sumatra, Ceylon, and other Asiatic countries. The berries are produced in clusters, and change as they ripen from green to red, and afterwards to black. White pepper differs from the black only in being stripped of its corticle or covering. To strip them, the black berries are steeped in salt water, and after they have been exposed to the sun for several days the chaff is rubbed off with the hands. In this operation the pepper loses much of its original warmth.—The long pepper is a fruit of a different species, also from the East Indies, and consists of numerous grains attached to a common footstalk.

PEP'PERMINT, in botany, a plant of the genus *Mentha*. It is highly aromatic and pungent. Also, a liquor distilled from the plant.

PEP'PERMINT-TREE, in botany, the *Encalyptus piperita*, a native of New South Wales.

PEP'PER-WATER, a liquor prepared from powdered black pepper; used in microscopical observations.

PER, a Latin preposition, signifying *by*, used in many phrases, as *per force*, or *per annum, per cent. &c.*——In chemistry, it is used as a prefix to denote *very* or *fully*, to the utmost extent, as in *peroxyde*, a substance oxydated to the utmost degree.

PERAM'BULATOR, an instrument for measuring distances, otherwise called a *pedometer*, or *surveying wheel*. The proper office of this instrument is that of measuring roads and large distances, where expedition and moderate accuracy are required.

PERBISUL'PHATE, in chemistry, a sulphate with two proportions of sulphuric acid, and combined with an oxyde at the maximum of oxydation.

PER CEN'TUM, or PER CENT., the rate of interest, or so much for each hundred; as, *five per cent.*, that is, five pounds for every hundred pounds.

PERCEP'TION, in logic, the first act of the mind, which consists in the reception of ideas through the medium of the senses. It has been well observed that the first objects which strike our senses give us our first ideas; and our wants are the cause of our *attention:* the repetition of these ideas, and the development of new wants, give birth to our sentiments and thoughts. The eyes convey the ideas of colour, the ears those of sounds, the nostrils those of odours, and the palate those of savours: these ideas have no connection with each other; they are separate ideas of different qualities of bodies; but the sense of *touching* unites the whole in *one* object, which may happen to be at the same time coloured, odorous, savoury, and sonorous.

PERCH, in ichthyology, a fish of the genus *Perca*, with rough scales and sharp incurvate teeth: its flesh is very delicate.——*Perch*, in commerce, a measure of five yards and a half, or sixteen feet and a half. The word *rod* is much more generally used than either *pole* or *perch*, though they all signify the same.

PERCHLO'RIC ACID, in chemistry, chlorine converted into an acid by combining with a maximum of oxygen. A compound of this acid with a base is termed *perchlorate*.

PERCUS'SION, in mechanics, the impression a body makes in falling or striking upon another: or the shock of two bodies in motion.

PERCUS'SION LOCKS, a newly-invented lock for fire-arms, which, in the place of the pan, has a small tube projecting horizontally from the side of the gun. In this tube another small tube stands perpendicularly. The cock, instead of being formed to hold a flint, is shaped somewhat like a hammer, with a hollow to fit upon the tube last mentioned. On this tube a little cap of copper is placed, in the bottom of which is a chemical mixture that kindles by percussion.

PERDU', in military affairs, a term applied to any soldier who is in a dangerous post; whence *enfans perdus*, in the plural, for the forlorn hope of an army.

PERE LA CHAISE, the name of the celebrated cemetery at Paris, laid out as such in 1804. It was formerly the chief seat of the Jesuits' establishment in France, and was presided over by Père la Chaise, confessor of Louis XIV. [See CEMETERY.]

PEREN'NIAL, in botany, a plant which lives or continues more than two years whether it retains its leaves or not.

PERFECTION. In the highest sense to which this word can be applied, it means an inherent or essential attribute of supreme or infinite excellence. If we speak of *physical perfection*, we mean that a natural object has all its powers, faculties, or qualities entire and in full vigour, and all its parts in due proportion. *Moral perfection* is the complete possession of such moral qualities and virtues as the thing spoken of is capable of possessing.

PERFO'LIATE, in botany, an epithet for a leaf the base of which entirely surrounds the stem transversely, so that the stem seems to have been driven through the middle of the leaf.

PERFORATÆ, in botany, the name of the 60th order of plants in Linnæus's Frag-

ments of a Natural Method; so called because these plants have their leaves perforated with small holes.

PE'RI. In Persian mythology, the *peris* are the descendants of fallen spirits, excluded from paradise until their penance is accomplished.

PERIANTH, in botany, the calyx or cup of a flower when it is contiguous to the other parts of fructification, in distinction from the calyx or outer covering of the flower.

PERICAR'DIUM, in anatomy, a double membrane which surrounds the whole compass of the heart. It contains a liquor which prevents the surface of the heart from becoming dry by its continual motion.

PER'ICARP, the fruit, or seed-vessel of plants, in all their forms and delicious varieties, serving as food for animals, and destined for that purpose.

PERICRA'NIUM, in anatomy, the membrane that closely invests the skull.

PER'IGEE, or PERIGÆ'UM, in astronomy, that point in the orbit of the sun or moon in which it is at the least distance from the earth: opposed to *apogee*.

PER'IGORD-STONE, in mineralogy, a sort of manganese found at Perigord in France.

PERI'GYNOUS, in botany, an epithet for a flower or plant which has the corolla or stamens inserted around the pistil.

PERIHE'LION, in astronomy, that point of a planet's orbit in which it is nearest to the sun; opposed to *aphelion*.

PERIHEXAHE'DRAL, in crystalography, a term designating a crystal whose primitive form is a four-sided prism, and in the secondary form is converted into a prism of six sides.

PERIM'ETER, in geometry, the ambit or extent which bounds a figure or body, whether rectilinear or mixed. In circular figures, instead of *perimeter* we use the word *circumference*, or *periphery*.

PERIOCTAHE'DRAL, in crystalography, a term designating a crystal whose primitive form is a four-sided prism, and in its secondary form is converted into a prism of eight sides.

PE'RIOD, in astronomy, the time which is taken up by a planet in making its revolution round the sun, or the duration of its course till it returns to the point of its orbit where it began.——In chronology, the revolution of a certain number of years, as the Julian period.——In Grammar, a full stop at the end of any sentence.——In arithmetic, a point or comma after every third place in a series of figures; also in the extraction of roots to point off the figures into given numbers or parcels.——*Period* also means an indefinite portion of any continued state, existence, or series of events; as, the first *period* of life, the earliest *periods* of history, &c.——*Period of a disease*, in medicine, is the time between the access of one fit, or paroxysm, and that of the next, including the entire exacerbation, decline, intermission, and remission. In physiology, *periods* designate the various stages in the development and decay of the animal organization, which are distinguished by a marked character, as the period of childhood, of puberty, &c.

PERIOD'ICALS, in literature, comprise the whole of those publications which appear at regular intervals, whether devoted to general information, or especially intended for some particular class of readers. They consequently include all the newspapers, reviews, and magazines, as well as such works on science and art as are published in a series of volumes, parts, or numbers; and, most assuredly, while they have contributed greatly to the diffusion of general knowledge, they have done much towards promoting the cause of truth, and facilitating the progress of science. [See NEWSPAPERS.]

PERIŒ'CI, in geography, such inhabitants of the earth as have the same latitudes, but who live in opposite longitudes; or live under the same parallel and the same meridian, but in different semicircles of that meridian. They have the same seasons throughout the year, but when it is noon-day with one, it is midnight with the other.

PERIOS'TEUM, in anatomy, a nervous, vascular membrane, endued with quick sensibility, immediately surrounding both the internal and external surfaces of the bones: it is hence divided into the *external* and *internal periosteum;* and where it externally surrounds the bones of the skull, it is usually called the *pericranium*. The seeming sensibility of the bones is that of this membrane; and its use appears to be to distribute the vessels on the external surfaces of bones.

PERIPATET'ICS, the followers of Aristotle, whose doctrines are distinguished by the name of the *Peripatetic Philosophy*. He also was called the Peripatetic because he delivered his lectures *walking* in the Lyceum at Athens.

PERIPH'ERY, the circumference of a circle, ellipsis, or other regular curvilinear figure.

PERIPH'RASIS, or PER'IPHRASE, in rhetoric, circumlocution; or the use of more words than are necessary to express an idea.

PERIPNEU'MONY, or PNEUMO'NIA, in medicine, an inflammation of the lungs, attended with acute fever, purulent expectoration, and difficult respiration.

PERIP'TEROUS, in architecture, an epithet for a place encompassed about with columns.

PERIS'CII, or PERIS'CIANS, in geography, the inhabitants of either frigid zone, between the polar circles and the poles; where the sun, when in the summer signs, moves only round about them, without setting, and consequently their shadows in the course of the day turn to every point of the compass.

PER'ISPERM, in botany, a thick, farinaceous, fleshy, or horny part of the seeds of plants, either entirely or only partially surrounding the embryo, and enclosed within the investing membrane.

WITHOUT AN ACQUAINTANCE WITH THE PERIODICAL LITERATURE OF A COUNTRY, A KNOWLEDGE OF THE STATE OF SOCIETY IS LOST.

BY THE LAW OF MOSES (DEUT. XIX. 19), IF A MAN TESTIFY FALSELY AGAINST HIS BROTHER, HE SHALL RECEIVE THE INTENDED PUNISHMENT.

BY THE PRUSSIAN CODE, WHOEVER PERJURES HIMSELF IS TO BE EXCLUDED FOR EVER FROM HIS EMPLOYMENTS, RIGHTS, AND CIVIL PROFESSION.

PERISPHAL'SIS, in medicine, the circumrotation of a luxated bone for the purpose of its restitution.

PERISTAL'TIC MOTION, in medicine, a spiral or vermicular spontaneous motion of the intestines, performed by the contraction of the circular and longitudinal fibres composing the fleshy coats of the intestines, by which the chyle is driven into the orifices of the lacteal veins, and the excrements are protruded.

PER'ISTYLE, in architecture, a circular range of columns, or a building surrounded by a row of pillars.

PERISYS'TOLE, in medicine, the pause or interval between the systole or contraction, and the diastole or dilatation of the heart.

PERITONÆ'UM, in anatomy, a thin, smooth, lubricous membrane investing the whole internal surface of the abdomen, and containing, more or less completely, all the viscera contained in it.

PER'JURY, in law, is the crime of wilful false swearing in any judicial proceeding, when lawfully required to depose the truth. The common law takes no notice of any false swearing, but such as is committed in some court of justice having power to administer the oath, or before some officer or magistrate invested with similar authority, in some proceeding relative to a civil suit or criminal prosecution; for the law esteems all other oaths unnecessary, at least, and hence will not punish the breach of them. By numerous statutes in England, the penalties of perjury have been extended to false oaths by electors, bankrupts, insolvent debtors, &c. *Subornation of perjury* is the offence of procuring a man to commit perjury. At the common law, perjury, and the subornation of it are punishable by fine, imprisonment, pillory, transportation, &c. —We are told that the Greeks imagined no person could swear falsely by Styx, without some remarkable punishment; and that no person guilty of perjury could enter the cave of Palæmon at Corinth, without being made a memorable example of divine justice: yet notwithstanding the general abhorrence in which perjury was held, and the credit which was given to such accounts of divine inflictions, it was so much practised by the Greeks, that *Græca fides* became a proverb.

PERMIT', a note given by the officers of the excise for conveying spirits, wine, tea, coffee, &c., from one place to another.

PERORA'TION, the concluding part of an oration, in which the speaker recapitulates the principal points of his discourse or argument, and urges them with greater earnestness and force, with a view to make a deep impression on his audience. The main excellence of a peroration consists in vehemence, pathos, and brevity.

PEROX'YDE, in chemistry, a substance containing an unusual quantity of oxygen. —To *peroxydise* is to oxydise to the greatest degree.

PERPENDIC'ULAR, hanging or extending in a right line from any point towards the centre of the earth or of gravity, or at right angles with the plane of the horizon. ——A *perpendicular* (in gunnery), is a small instrument used for the finding the centre line of a piece in the operation of pointing it at any object.

PERPET'UAL MOTION. The problem of a perpetual motion consists in the inventing of a machine which has the principle of its motion within itself; and the means proposed to solve this problem have been as various and opposite as its solution appears to be improbable. The difficulty is, that the resistance of the air, the friction of the parts of the machine, &c., necessarily retard, and finally stop, the motion of the machines, and therefore seem to render perpetual motion an impossibility. [See MOTION.]

PERPHOS'PHATE, in chemistry, a phosphate in which the phosphoric acid is combined with an oxyde at the highest degree of oxydation.

PERQUADRISUL'PHATE, in chemistry, a sulphate with four proportions of sulphuric acid combined with a maximum of oxyde.

PERROQUET' or PARROQUET', in ornithology, a small kind of parrot. Also, the *Alca Psittacula*, an aquatic fowl inhabiting the isles of Japan and the western shores of America.

PER'RY, the juice of pears, clarified by fermentation, in a manner similar to which apples are prepared in the process of making cider.

PERSECU'TION, the infliction of pain, punishment, or death upon others unjustly, more especially for adhering to a religious creed or mode of worship. The history of the world is full of persecutions; and there is scarcely any dominant sect or party religious or political, which has not at times disgraced humanity by inflicting unjust punishment or penalties upon their fellow-men, for adhering to principles which their consciences dictated and their judgment approved.

PERSIST'ENT, in botany, continuing without withering; as a *persistent calyx*, continuing after the corolla is withered; or a *persistent leaf*, remaining on the plant till the fruit is ripe, or till after the summer is over.

PER'SON, in its general sense, is a human being; a man, woman, or child.—— *Person*, in grammar, a term applied to such nouns or pronouns, as being either prefixed or understood, are the nominatives in all inflections of a verb. I, thou or you, he, she or it, are called the first, second, and third *persons*. Hence we apply the word *person* to the termination or modified form of the verb used in connection with the persons; as, the first *person* of the verb; or the verb is in the second *person*.

PER'SONAL, in law, belonging to the person and not to the thing; as *personal goods*, opposed to *real* property or estates: *personal action*, an action against the person, wherein a man claims satisfaction in damages for an injury to his person or property.——*Personal identity*, in metaphysics, sameness of being, of which conscious-

ness is the evidence.——*Personal verb*, in grammar, a verb that has inflections or endings to express the persons of the agent.

PERSONATÆ, in botany, the 40th Linnæan natural order of plants, characterized by being fetid, poisonous, and aromatic, with an irregular open petal.

PERSONIFICATION, the giving to an inanimate object the sentiments and language of a rational being; or the representation of an inanimate being with the affections and actions of a person. The more the imagination prevails among a people, the more common are personifications; and as reflection acquires the ascendancy, personifications are less used.

PERSPECTIVE, that branch of optics which teaches the art of representing objects on a plane surface, in the manner they appear under the peculiarities incident to distance and height. It is consequently a science of the first importance to the painter. In a practical sense, *perspective* is the art of drawing, according to the principles of geometry, the true representations of real objects; and is divided into *lineal perspective*, which relates to the position, form, magnitude, &c. of the several lines or contours of objects, and *aerial perspective*, which has principally a reference to the colouring and shading of distant objects. Suppose we view a point situated beyond an upright transparent plane, as a glass window, the spot where a straight line from the eye to this point will go through the window is the *perspective representation* of it: for the eye views all objects by means of rays of light, which proceed from it, to the different points of the object, in straight lines. Let us then imagine a spectator to be looking at a prospect without doors, from within, through a glass window; he will perceive not only the vast extent which so small an aperture will admit to be seen by his eye, but also the shape, size, and situation of every object upon the glass. If the objects are near the window, the spaces which they take upon the glass will be proportionably larger than when they are at a greater distance; if they are parallel to the window, then their shapes upon the glass will be parallel also; but if they are oblique, then their shapes will be oblique, and so on. And he will always perceive, that as he alters the situation of his eye, the situation of the objects upon the window will be altered also: if he raises his eye, the objects will seem to keep pace with it, and rise higher upon the window; and the contrary, if he lowers it. And so in every situation of the eye, the objects upon the window will seem to rise higher or lower; and consequently the depth of the whole prospect will be proportionably greater or less, as the eye is elevated or depressed; and the horizon will, in every situation of the eye, be upon a level with it: that is, the imaginary line which parts the earth and sky will seem to be raised as far above the ground upon which the spectator stands as his eye is. Now suppose the person at the window, keeping his head steady, draws the figure of an object seen through it upon the glass with a pencil, as if the point of the pencil touched the object; he would then have a true representation of the object in perspective, as it appears to his eye: for as vision is occasioned by pencils of rays coming in straight lines to the eye from every point of the visible object, it is plain that, by joining the points in the transparent plane through which all those pencils of rays respectively pass, an exact representation must be formed of the object, as it appears to the eye in that particular position, and at that determined distance. And were pictures of things to be always first drawn on transparent planes, this simple operation, with the principle on which it is founded, would comprise the whole theory and practice of perspective. But what is called the *art of perspective*, according to certain rules deduced from optics and geometry, constitutes a study too intricate for its thorough development in a work of this kind, and forms a branch of study which can only be obtained *secundum artem*.——*Aerial perspective* teaches how to judge of the degree of light which objects reflect in proportion to their distance, and of the gradation of their tints in proportion to the intervening air. It is only the nearest objects which appear in their true colours and full light. In the case of the more distant, the light and colour become blended with the colours of the vapours which fill the air, in proportion to their distance, until at last the objects become lost in an indistinct mass, of a blueish tinge, in the horizon. A painter, therefore, who would succeed in aërial perspective, ought carefully to study the effects which distance in its different degrees, or accidental colours of light, have on each particular colour; and in order to give any colour its proper effect in proportion to its distance, it ought to be known what the appearance of that colour would be were it close to the eye, regard being had to that degree of light which is chosen as the principal light of the picture: for if any colour is made too bright for another, or for the general colouring of the picture, the brightness of that colour, to use a technical phrase, will kill the rest. In short, the harmony of a picture, and that captivating charm which we find more particularly in good landscape painting, depend greatly upon a correct application of aërial perspective.

PERSPIRATION, in medicine, that vaporous evacuation of the juices of the body through the pores of the skin, which equalizes the heat in animals. It is distinguished into *sensible* and *insensible* perspiration; the former of which is visible in the form of very little drops adhering to the epidermis, and the latter is so subtile a vapour that we cannot see it with the naked eye. The uses of the insensible perspiration are, 1. to liberate the blood from superfluous animal gas, azote, and water; 2. to eliminate the noxious and heterogeneous excrements; hence the acid, rancid, leguminous, or putrid perspiration

WOOLLEN CLOTH PRESERVES WARMTH TO THE SKIN UNDER ALL CIRCUMSTANCES, AND ALLOWS THE PERSPIRATION TO ESCAPE THROUGH ITS TEXTURE.

"PETALISM" WAS INTRODUCED IN SYRACUSE TO PREVENT THE TYRANNY OF THE RICHER CITIZENS, WHO OFTEN AIMED AT THE DIADEM.

EVERY KIND OF WATER CARRIES IN IT SOME EARTHY PARTICLES, WHICH BECOME STONE OF A GREATER OR LESS DEGREE OF HARDNESS.

of some men; 3. to moisten the external surface of the body, lest the epidermis and its nervous papillæ be dried up by the atmospheric air; and 4. to counterbalance the suppressed pulmonary transpiration of the lungs. Perspiration is accordingly essential to health, and when deficient may be promoted by exercise, the warm bath, or friction. At ordinary times, it should never fail of encouragement from washing the hands, feet, &c.

PERSUL'PHATE, in chemistry, a combination of sulphuric acid with the peroxyde of iron.

PERTU'SED, in botany, full of hollow dots on the surface, as a leaf.

PERU'VIAN BARK. [See BARK.]

PESA'DE, in horsemanship, the motion of a horse when he raises his fore quarters, keeping his hind feet on the ground without advancing.

PES'TILENCE, any contagious or infectious disease that is epidemic and mortal.——It is also used to denote any moral disease or corruption destructive of happiness.

PET'AL, in botany, a flower-leaf. In flowers of several petals, the corolla is the whole, and a petal is one of the leaves of which the whole corolla is composed.——*Petaloid*, having the form of petals.

PET'ALISM, in antiquity, a form of proscription or banishment practised at Syracuse, by writing the person's name on a leaf; whence the name. It differed from the Athenian *ostracism* merely in being for five years instead of ten, and the name being written on leaves instead of shells or tiles.

PET'ALITE, a rare mineral occurring in masses, having a foliated structure; its colour milk white, or shaded with gray, red, or green.

PETARD', in fortification, a hollow engine shaped like a sugar-loaf, to be loaded with powder and fixed on a plank; made for breaking open gates, drawbridges, &c.

PET'ASUS, in antiquity, a covering for the head, similar to a broad brimmed hat, used to keep off the heat of the sun.——In architecture, the cupola of a house, in the form of a petasus.

PETAURIS'TÆ, in antiquity, a name given to certain athletæ, who threw themselves from a machine called a *petaurum*, which was hung high in the air, and descended to the earth by means of a rope.

PETE'CHIÆ, purple spots which appear on the skin in malignant fevers. Hence the term *petechial* fever.

PE'TIOLE, in botany, the leaf-stalk, or the stem which supports the leaf. Hence the epithet *petiolate* for a leaf growing on a petiole.

PET'IT, or PET'TY. The former word occurs in our law books in such phrases as *petit jury*, *petit treason*, *petit larceny*, &c.; but as the practice is giving way to the use of the English *petty*, and as there is no reason why the language should be disfigured with barbarisms or jargon of any kind, we trust that these and other similar hybrid compounds will ere long be altogether abolished.——*Petit treason*, the crime of killing a person to whom the offender owes duty or subjection. Thus the crime of murder, when a wife kills her husband, or a servant his master, has this appellation.——*Petit larceny*, the stealing of goods of the value of twelve pence, or under that amount.——*Petit constable*, an inferior civil officer subordinate to the high constable.——*Petit jury*, a jury of twelve freeholders who are empanelled to try causes in a court; so called in distinction from the grand jury, which tries the truth of indictments. [See JURY.]

PETI'TION, a formal supplication or request made by an inferior to a superior, especially to one having some jurisdiction. Also, a paper containing a supplication or solicitation; as private or public *petitions* to parliament.

PETI'TIO PRINCIPII, in logic, the taking a thing for true, and drawing conclusions from it as such; when it is either false, or at least requires to be proved before any inferences can be deduced from it. In common parlance this is called "begging the question."

PETONG', the Chinese name of a species of copper of a white colour. It differs from *tutenag*, though it is sometimes confounded with it.

PE'TREL, in ornithology, the *Procellaria* of Linnæus, a genus of birds well known to seamen by the name of "Mother Carey's chickens," whose appearance is dreaded by them as a sure prognostic of a storm. They breed in rocks adjoining the sea, forming their nests in cavities. They seem to repose in a common breeze; but upon the approach, or during the continuation, of a gale, they surround a ship, and catch up the small animals which the agitated ocean brings near the surface, or any food that may be dropped from the vessel. Whisking like an arrow through the deep valleys of the abyss, and darting away over the foaming crest of some mountain wave, they attend the labouring bark in all her perilous course. When the storm subsides, they retire to rest, and are no more seen. The inhabitants of the Faroe islands use them as lamps: they pass a wick through their bodies, which, when lighted, burns a long time, from the quantity of fat they contain.

PETRIFACTION, in natural history, the conversion of wood, bones, and other substances into stone. Petrified bodies are more or less altered from their original state, according to the different substances among which they have lain in the earth. Some are found but very slightly changed, while others are so highly impregnated with crystaline, sparry, pyritical, or other extraneous matter, as to appear mere masses of stone; but they are generally of the external dimensions, and retain more or less of the internal figure of the bodies into the pores of which this matter has made its way. The animal substances thus found petrified are sea-shells, the teeth, bony pa-

lates and bones of fish, the bones of land animals, &c. These are found variously altered by the insinuation of stony and mineral matter into their pores; and the substance of some of them is wholly gone, there being only stony, sparry, or other mineral matter remaining in the shape and form. [See ORGANIC REMAINS.]

PETRO'LEUM, or ROCK-OIL, in mineralogy, an extremely subtile and penetrating fluid exuding from the earth, or from cavities in rocks, being the thinnest of all the native bitumens. It is very light and pellucid; but though equally bright and clear under all circumstances, it is liable to a very great variety as to its colour. The substances which mineralogists have distinguished by the names asphaltum, maltha, petroleum, and naptha, are thought by some naturalists to be mere varieties of one species, and form a series which passes into coal. They may be thus distinguished. *Asphaltum* forms the connection with pitch coal; and is found in veins, and in small masses, and also sometimes on the surface of lakes. *Maltha* is softer, has a degree of tenacity, and a strong bituminous smell. *Petroleum* is semi-liquid, semi-transparent, of a reddish-brown colour, and fetid odour. *Naptha* is of a lighter colour, more or less transparent, perfectly liquid, light, odoriferous, volatile, and inflammable.

PETROMY'ZON, in ichthyology, the lamprey, a genus of fishes whose form and motion resemble those of the eel, and of which there are nine species. The *Petromyzon marinus*, or great lamprey, is usually of a brown olive colour tinged with yellowish white. It frequently grows to the length of three feet, is an inhabitant of the seas, but ascends the rivers early in the spring, in which it resides a few months, and then returns to the ocean. It is viviparous, and supposed to subsist almost entirely on worms and fishes. Fishes of this genus fasten themselves with the jagged edges of the mouth to large stones with the most extraordinary firmness. They have a wonderful tenacity to life, and various parts of the body long continue to move after it is separated from the head; and the head itself will adhere to a rock for hours after the greater part of the body is cut away. The *Petromyzon fluviatilis*, or little lamprey, is very abundant in the Thames.

PETROSI'LEX, in mineralogy, a genus of earths of the siliceous order; consisting for the most part of silica, with a portion of alumina and carbonate of lime. It is found in primitive rocks and stratified mountains, has no lustre, and melts before the blowpipe.

PETRO'SUM OS, in anatomy, the inner process of the bones of the temples; so named on account of its hardness and craggedness.

PETUNSE, or PETUN'TSE, in mineralogy, a sort of porcelain clay used by the Chinese in the manufacture of porcelain or china-ware. It is a variety of feldspar.

PEWTER, a composition of factitious metal, consisting of tin and lead, or of tin alloyed with such proportions of lead, zinc, bismuth, antimony, or copper, as the experience of the workman has shown to be most conducive to the improvement of its hardness and colour. The kind of pewter of which tea-pots are made (called Britannia metal) is said to be an alloy of equal parts of brass, tin, antimony, and bismuth; but it is believed that the tin greatly preponderates. The pewterer fashions almost all his articles by casting them in moulds of brass or bronze, which are made in various pieces nicely fitted and locked together.

PHAGEDE'NIC, a medicine or application that eats away proud or fungous flesh. Any wound or ulcer that corrodes or eats away the flesh is also termed phagedenic.——*Phagedenic water*, a mixture of quick lime and corrosive sublimate.

PHALÆ'NA, in entomology, the moth, a genus of insects of the *lepidopterous* order, having the antennæ gradually tapering from the base to the tips, tongue spiral, and wings when at rest generally deflected.

PHAL'ANX, in the military affairs of Greece, a square and compact battalion or body of soldiers, formed in ranks and files compact and deep, with their shields joined and pikes crossing each other, so as to render it almost impossible to break it. At first the phalanx consisted of 4000 men, but was afterwards doubled and even quadrupled. The Macedonian phalanx is thus described by Polybius. It was a square of pikemen, consisting of sixteen in flank and five hundred in front; the soldiers stood so close together that the pikes of the fifth rank extended three feet beyond the front: the rest, whose pikes were not serviceable owing to their distance from the front, couched them upon the shoulders of those that stood before them, and so locking them together in file, pressed forward to support and push on the former rank, by which means the assault was rendered more violent and irresistible.——The word *phalanx* is likewise used for any combination of people distinguished for firmness or solidity of union.

PHAL'AROPE, in ornithology, the name of several species of water-fowls inhabiting the northern latitudes of Europe and America. They live on the sea coasts, fly well, and swim expertly, resisting the heaviest waves, but never dive. Their flesh is oily and unpalatable.

PHANTASMAGO'RIA, an optical exhibition very similar to the magic lantern. It takes its name from *phantasm*, an imaginary or airy appearance.

PHARISEES, a sect among the Jews, who distinguished themselves by their zeal for the traditions of the elders, which they derived from the same fountain with the written word itself, pretending that both were delivered to Moses on Mount Sinai, and were therefore both of equal authority. From their rigorous observance of these traditions they considered themselves as more holy than other Jews, and therefore separated themselves from them; and hence, from the Hebrew word *pharis*, which signi-

THE PHARISEES BELIEVED THAT A RESURRECTION WAS THE PRIVILEGE OF THE CHILDREN OF ABRAHAM ALONE, WHO WOULD RISE ON MOUNT SION.

fies to separate, they had the name of *pharisees* or *separatists*. The pharisees numbered in their ranks the most distinguished lawyers and statesmen in Judæa; and as persons of all conditions were admitted into their society, they gained a political influence which often decided the fate of the Jewish nation under the Maccabees, and brought into their hands the power which had been left to the great council by the Romans in the time of Christ. They believed in a resurrection from the dead, and the existence of angels; but, according to Josephus, their belief extended to no more than a Pythagorean resurrection, that is, of the soul only, by its transmigration into another body and being born anew with it. From this resurrection they excluded all who were notoriously wicked, being of opinion that the souls of such persons were doomed to a state of everlasting woe.

PHARMACEU'TICS, pharmacy; or the science of preparing and exhibiting medicines.

PHAR'MACOLITE, in mineralogy, arseniate of lime, which is either milk white or inclining to a yellowish white, and occurs in small reniform, botryoidal and globular masses, with a silky lustre.

PHARMACOL'OGY, the science or knowledge of drugs, or the art of preparing medicines. He who writes on this science is called a *pharmacologist*, and he who sells the medicines so prepared, a *pharmacopolist*, or apothecary.

PHARMACOPŒ'IA, a dispensatory, or book of directions for the composition of medicines approved of by medical practitioners, or published by authority.

PHAR'MACY, in its most extensive sense, signifies the art of preserving, preparing, compounding and combining whatever substances may be necessary to use for medical purposes; and as these substances may be mineral, vegetable, or animal, to understand the theory of pharmacy requires a knowledge of chemistry, botany, zoology, and mineralogy, in order to determine their properties and the laws of their composition and decomposition. In a narrower sense, pharmacy is merely the art of compounding and mixing drugs according to the prescription of the physician.

PHA'ROS, a light-house, or lofty building near the sea, where a fire is kept burning during the night, to serve as a beacon to vessels. The Pharos of Alexandria, built in the reign of Pharos, was one of the most celebrated works of antiquity, and from this circumstance the name is supposed to have been given to edifices of a similar description. The tower of king Pharos stood at the mouth of the Nile; it consisted of several stories or galleries, surmounted with a lantern, and was seen for many leagues at sea, as well as all along the coast.

PHARYNGOT'OMY, in surgery, the operation of making an incision into the pharynx to remove a tumour or anything that obstructs the passage.

PHA'RYNX, in anatomy, the muscular bag at the back part of the mouth. It is shaped like a funnel, adheres to the fauces behind the larynx, and terminates in the œsophagus. Its use is to receive the masticated food, and to convey it into the œsophagus.

PHA'SES, in astronomy, the various appearances of the moon at different ages, being first a *crescent*, then a *semicircle*, then *gibbous*, and lastly *full*, when she returns by the same gradation to the state of a new moon.——The word *phases* is sometimes used metaphorically, to designate various stages and appearances of one great historical event; as, "the different *phases* which the French revolution assumed," &c.

PHASIA'NUS, in ornithology, a genus of birds of the order *Gallinæ*, including the different varieties of the pheasant species, and the domestic cock and hen.

PHASMA'TA, in physiology, certain appearances arising from the various tinctures of the clouds, by the rays of the heavenly luminaries, especially the sun and moon.

PHEAS'ANT, in ornithology, a beautiful bird of the genus *Phasianus*, of which there are several varieties, including among them the common domestic fowl. The true pheasant *(phasianus colchicus)*, the delight of the sportsman and the epicure, is distinguished by having a long tail, the feathers of which are of different lengths, and overlay each other. In their wild state, these birds feed, like the rest of the gallinaceous tribe, upon vegetable food. The female constructs her nest of leaves in some retired spot; and if any of her eggs are taken away, she continues, like the common hen, to lay an additional quantity. There are several varieties, produced by climate and domestication. The golden pheasant *(phasianus pictus)*, a native of China, is remarkable for the beauty of its plumage: the prevailing colours are red, yellow, and blue, and it is distinguished by a crest upon the head, which can be raised at pleasure. The iris, bill, and legs are yellow; the tail long and richly tinted, and from above it arise a number of long, straight feathers, of a varied hue of scarlet and yellow. Another fine species found in China is the silver pheasant *(phasianus nycthemerus)*: it is of a silvery white colour, with very delicate black lines on each feather, and black under the belly. But the most splendid bird of this genus is the argus pheasant *(phasianus argus)*. This species, which is of a large size, is found on the mountains in Sumatra and some other of the Indian isles. It is distinguished by its long tail, large wing feathers, and a profusion of ocellate spots, which give this bird an extraordinary and most beautiful appearance.

PHELLOPLAS'TICS, the art of representing works of architecture on a reduced scale in cork, which affords very fine models, and are cheaper than those in wood, stone, gypsum, &c.

PHEN'GITE, in mineralogy, a beautiful species of alabaster, superior in brightness to the generality of marble.

PHENOM'ENON, in physics, whatever

is presented to the eye by observation or experiment, or whatever is discovered to exist; as, the *phenomena* of heavenly bodies or terrestial substances; the *phenomena* of heat, colour, vision, &c.

PHE'ON, in heraldry, a kind of dart with a barbed head. Its head is frequently borne in coat armours, and termed a *pheon's* head.

PHIDI'TIA, in antiquity, Lacedemonian festivals, remarkable for the frugality of the entertainment, and the charitable intention of the meeting. They were held in public places, and in the open air. Those who attended made contributions of flour, wine, cheese, and figs. Rich and poor assisted alike at this feast, and were upon the same footing; the design of the institution being, like that of the Roman Charistia, to reconcile differences, and to cultivate peace, friendship, and a good understanding among all the citizens, of every rank and degree.

PHILADELPH'US, in botany, a genus of plants, class 12 *Icosandria*, order 1 *Monogynia*. The species are deciduous shrubs of the Syringa tribe.

PHILAN'THROPY, good-will and benevolence towards the whole of mankind. It differs from *friendship*, inasmuch as it has no limits to its sphere of action, whereas friendship may be confined to an individual; but a true *philanthropist* so loves his fellowmen that he is continually exerting himself for their welfare.

PHILIP'PIC, a word used to denote any discourse or declamation full of acrimonious invective. It is derived from an oration made by Demosthenes against Philip of Macedon, in which the orator inveighs against the indolence of the Athenians. The fourteen orations of Cicero against Mark Antony are also called *philippics*.

PHILOL'OGY, in its usual acceptation, is that branch of literature which comprehends a knowledge of the etymology or origin and combination of words, and whatever relates to the history, affinity, and present state of languages. In a wider sense it signifies an assemblage of sciences, consisting of grammar, rhetoric, poetry, antiquities, history, criticism, &c. usually understood by the French term *belles lettres*.

PHILLYRE'A, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. The species consist of the mock privet, well known evergreen shrubs.

PHILOSOPHY, the love or pursuit of knowledge or wisdom. In a general sense, the term philosophy includes observation and reflection on every subject; or an investigation of the causes of all phenomena, both of mind and of matter. The term *philosopher* originated with Pythagoras, who declined the title of *the Wise*, which had been given to his predecessors, and contented himself with the name of a "friend, or lover of wisdom." The true end of philosophy is to ascertain facts or truth, and the causes of things and their phenomena; to enlarge our views of God and his works, and to render our knowledge of both practically useful and subservient to human happiness. It may be divided into three parts, intellectual, moral, and physical. The intellectual part comprehends logic and metaphysics; the moral part contains the laws of nature and nations, ethics, and politics; the physical part comprises the doctrine of bodies, animate or inanimate. With how much propriety then do those who apply themselves to the study of nature call themselves philosophers (lovers of science), rather than assume any other name which would arrogantly imply the perfection of their knowledge. Philosophy, in general, was so imperfect in the earliest ages of antiquity, and even in the more polished times of Greece and Rome, that it appears, when looking down from the high pinnacle of modern improvements and of late discoveries, but little removed from solemn trifling and puerile affectation. Yet some of the ancients, it must be confessed, have come so near the truth in matters of high importance, that we are led to wonder how they failed of making the discovery. In ethics and in politics they have left behind them some excellent works; but the solution of the phenomena of nature was reserved for a Bacon and a Newton to effect. Their reasonings were hypothetical, for they never thought of arguing by induction—the only chain by which truth can be drawn from many of her deep recesses. [The reader will find, under their proper heads, the several parts of Philosophy, natural and experimental, separately noticed. On a subject so vast and comprehensive, it would be vain indeed for us to attempt a complete treatise, or to endeavour to write a continuous history; but we may, not inappropriately, introduce in this place a brief sketch of the leading systems which prevailed at different periods of antiquity, and conclude by a few observations on the progress of philosophy during more recent times.]——*Pythagorean philosophy*, the system taught by Pythagoras, who flourished 500 years before the Christian era. He described the Deity as one incorruptible, invisible being; and differed from some of the ancients, as Epicurus, in conceiving a connection between God and man: that is, in teaching the doctrine of a superintending providence. He asserted the immortality of the soul; but in a sense essentially peculiar, and which appears to have been adopted by Plato, as it is, in part, at this day by the Hindoos. In the cosmogony of Pythagoras, spirit, however diffused through all animals, was part of the Divinity himself, separated only by the gross forms of matter, and ready, whenever disengaged, to unite itself with the kindred essence of God: but God was only purity; and the mind recoiled from the idea of uniting with him a portion of spirit soiled with the corruption of a sinful life. The soul, therefore, once tainted, could never return to the Deity whence it emanated, till it had again recovered its innocence. After having animated a human body by which crimes had been committed, it was denied the great object of its desire, a union with

THE ORIENTALS TREATED THE EARTH AS A SPHERE FROM THE EARLIEST AGES, AND FROM THEM PYTHAGORAS DERIVED THAT KNOWLEDGE.

its God, and forced to enter into other bodies, till at length it filled a righteous one. To this theory was added another, by means of which punishments, proportioned to its offences, were awarded: according to this, the soul of a negro-driver would pass into the body of an infant negro; and that which in one existence plied the whip, in the other would receive the lash: the soul of the wicked would occupy the body of some animal exposed to suffering; and that of a being of few foibles undergo a sentence proportionably mild.—Such is the doctrine of the metempsychosis or transmigration of souls, a leading feature in the Pythagorean system.——*Socratic philosophy*, or the doctrines of Socrates, who flourished at Athens about 400 years B.C., and died a martyr in the cause of natural religion against paganism. He is said to have opened the career of moral philosophy in Greece, where he preceded Plato, from the writings of which latter the philosophy of Socrates is chiefly known, for he wrote nothing himself. While other philosophers boasted of their knowledge, he laid the greatest stress upon his ignorance, asserting that he knew nothing but this, that *he knew nothing*. Socrates led men from the contemplation of universal nature to that of themselves; a branch of philosophy which was inculcated in that famous inscription, *Know thyself!* The Socratic method of argument was that of leading an antagonist to acknowledge a proposition himself, by dint of repeated questions, in preference to that of laying it down authoritatively.——*Platonic philosophy*, a system of theology and morals, delivered by Plato about 350 years before Christ. Plato, it is said, laboured to re-establish natural religion by opposing paganism. The existence of the one God was zealously inculcated by him; and also the immortality of the soul, the resurrection of the dead, the everlasting reward of righteousness, and punishment of sin. It was Plato, too, who taught that the world was created by the *Logos* or *Word*; and that through knowledge of the word men live happily on earth and obtain eternal felicity hereafter. From him, also, came the doctrine of *grace*, and the inducements to monastic life; for he pressed upon his disciples that the world is filled with corruption; that it is the duty of the righteous to fly from it and to seek a union with God, who alone is life and health; that in the world the soul is continually surrounded with enemies; and that, in the unceasing combat through which it has to struggle, it can conquer only with the assistance of God or of his holy angels. "A happy immortality," said Plato, "is a great prize set before us, and a great object of hope, which should engage us to labour in the acquirement of wisdom and virtue all the time of our life." In morals, he taught that there is nothing solid and substantial but piety, which is the source of all virtues and the gift of God; that the love of our neighbour, which proceeds from the love of God as its principle, produces that sacred union which makes families and nations happy; that self-love produces that discord and division which reigns among mankind, and is the chief cause of our sins: that it is better to suffer wrong than to do it; that it is wrong to hurt an enemy or to revenge an injury received; that it is better to die than to sin; and that man ought continually to learn to die, and yet to endure life with all patience and submission to the will of God. —— The *Aristotelian philosophy*, which succeeded the Platonic, is characterized by a systematic striving to embrace all the objects of philosophy by cool and patient reflection.——The *Epicurean philosophy*, or the system of Epicurus, an Athenian. This teacher laid down, as the basis of his doctrine, that the supreme good consists in pleasure; a proposition that soon suffered a twofold abuse. On the one hand, by misconstruction, it was regarded as a barefaced inculcation of sensuality; on the other, adopted by the luxurious, the indolent, and the licentious, as a cloak and authority for their conduct; and hence it has happened that the name Epicurean is now used in an absolute sense to designate one minutely and luxuriously attentive to his food. Epicurus is reported to have written three hundred books, but of these none are extant; and the particulars of his philosophy, which have come down to posterity, are chiefly found in the writings of Lucretius, Diogenes, Laertius, and Cicero. His system, for which he is said to have been almost wholly indebted to Democritus, consisted of three parts: canonical, physical, and etherial. Soundness and simplicity of sense, assisted with some natural reflections, constituted all the method of Epicurus. His search after truth proceeded only by the senses, to the evidence of which he gave so great a certainty that he considered them as the first natural light of mankind. It is in the meanings allowed to the words pleasure and pain that everything which is important in the morals and doubtful in the history of the Epicurean system is contained. According to Gassendus, the *pleasure* of Epicurus consisted in the highest tranquillity of mind, united with the most perfect health of body; blessings enjoyed only through the habits of rectitude, benevolence, and temperance; but Cicero, Horace, Plutarch, and several of the fathers of the Christian church represent the system in a very different point of view. The disagreement, however, is easily reconciled, if we believe one side to speak of what Epicurus *taught*, and the other of what many of his followers, and still more of those who took shelter under his name, were accustomed to *practise*.——To the foregoing we must add the *Stoic philosophy*, or the doctrines of Zeno the stoic, whose morality was of a magnanimous and unyielding kind, formed to resist temptation to evil, and to render men callous to adversity: thus they maintained, among other things, that a man might be happy in the midst of the severest tortures; —the *Cynic philosophy*, the followers of

which affected a great contempt of riches and of all sciences except morality;—and the *Sceptical philosophy*, under Pyrrho, who affected to doubt everything.——In glancing at the *history of philosophy*, the student has abundant opportunities of observing its gradual development as a science, and tracing the progress and aberrations of the human mind—in themselves subjects most important and instructive. Departing from, or only partially retaining, the conflicting dogmas of the Greek and Roman philosophers, we find the scholastics of the middle ages engaged in a struggle for the attainment of intellectual excellence, under the influence of principles derived from the Christian faith and doctrine; yet the progress of philosophic truths was for a long time feeble, irregular, and vacillating. During the 15th century, there arose a freer and more independent spirit of inquiry, penetrating deeper into ultimate causes; till, at length, the cool and searching energy of Bacon enabled him to produce his *Novum Organum*, and to give a more substantial basis to the efforts of the intellect, by making observation and experience the predominant character of philosophy. Some there were, however, who disputed his laws, and hence new theories occasionally obtained a temporary distinction; but his doctrines, in a great measure, ultimately prevailed; and, at no distant period, the calm reasoning of Locke introduced into the study of the human mind the method of investigation which his great predecessor had pointed out. The subject, however, presents so wide and tempting a field for observation, that we dare not venture on it, lest, by unduly extending one article, we may be compelled to curtail others which equally demand our attention; and enough, perhaps, has been already said to direct the inquiring mind towards a study which, as it were, embraces all nature in its mighty grasp.

PHILOS'OPHER'S STONE, the object of alchemy by a long sought for preparation, by which, as they pretended, the baser metals might be converted into gold.

PHLEBOT'OMY, in the medical art, the practice of opening a vein for the purpose of letting blood.

PHLEGM, in anatomy, bronchial mucus; a thick tenacious matter secreted in the throat.——In chemistry, a watery distilled liquor, in distinction from a spirituous liquor.

PHLEGMA'SIÆ, in medicine, inflammations; the second order in the class *pyrexiæ* of Cullen's nosological arrangement, characterized by pyrexia, with topical pain and inflammation; the blood, after venesection, exhibiting a buffy coat.

PHLOGIS'TON, a word formerly used to denote the principle of inflammability; or pure fire fixed in combustible bodies, in distinction from fire in action, or in a state of liberty. But the theory having proved to be false, it is generally abandoned.

PHŒ'NIX, in fabulous history, a wonderful bird which the ancients describe as of the size of an eagle; its head finely crested with a beautiful plumage, its neck covered with feathers of a gold colour; its tail white, and its body purple. By some authors this bird is said to come from Arabia to Egypt every five hundred years, at the death of his parent bringing the body with him, embalmed in myrrh, to the temple of the sun, where he buries it. According to others, when he finds himself near his end, he prepares a nest of myrrh and precious herbs, in which he burns himself: but from his ashes he revives in the freshness of youth. The several eras when the phœnix has been seen are fixed by tradition. The first, we are told, was in the reign of Sesostris; the second in that of Amasis; and in the period when Ptolemy, the third of the Macedonian race, was seated on the throne of Egypt, another phœnix directed its flight towards Heliopolis. "When to these circumstances," observes an anonymous critical writer, "are added the brilliant appearance of the phœnix, and the tale that it makes frequent excursions with a load on its back, and that when, by having made the experiment through a long tract of air, it gains sufficient confidence in its own vigour, it takes up the body of its father, and flies with it to the altar of the sun, to be there consumed, it cannot but appear probable that the learned of Egypt had enveloped under this allegory the philosophy of comets." From late mythological researches, it is conjectured that the phœnix is a symbol of a period of 500 years, of which the conclusion was celebrated by a solemn sacrifice, in which the figure of a bird was burnt.—— *Phœnix*, in astronomy, one of the new southern constellations.

PHON'ICS, the doctrine or science of sounds; otherwise called *acoustics*.

PHONOL'OGY, the science or doctrine of the elementary sounds uttered by the human voice, including its various degrees of intonation.

PHOS'GENE, in chemistry, an epithet for giving or generating light. *Phosgene gas* is generated by the action of light on chlorine and carbonic oxyde gas.

PHOSPHORES'CENCE, a faint light or shining lucidity in any matter or substance, unaccompanied with sensible heat. It is exhibited by certain animals, as well as by vegetable and mineral substances. We have before had occasion to speak of the phosphorescence or luminous property of certain marine animals, which may be farther illustrated by the following interesting account (among others) lately given to the public in "Bennett's Voyage round the Globe:"—"During a dark and calm night, with transient squalls of rain, in lat. 43° S., long. 79° W., the sea presented an unusually luminous appearance. While undisturbed, the ocean emitted a faint gleam from its bosom, and when agitated by the passage of the ship, flashed forth streams of light which illuminated the sails and shone in the wake with great intensity. A net, towing alongside, had the appearance of a ball of fire followed by a long and sparkling train; and

large fish, as they darted through the water, could be traced by the scintillating lines they left upon its surface. The principal cause of this phosphorescent appearance was ascertained by the capture of numerous medusæ, of flat and circular form, light-pink colour, and eight inches in circumference; the body undulated at the margin, spread with small tubercles on its upper surface, and bordered with a row of slender tentacles, each five feet long, and stinging sharply when handled. The centre of the under surface was occupied by a circular orifice, or mouth, communicating with an ample interior cavity, and surrounded by four short and tubular appendages, which, when conjoined, resembled the stalk of a mushroom—a plant to which the entire animal bore much resemblance in form. When captive, the creature displayed a power of folding the margin of the body inwards; but its natural posture in the water was with the body spread out, and the tentacles pendent. When disturbed, this medusa emitted from every part of its body a brilliant greenish light, which shone without intermission as long as the irritating cause persisted; but when that was withdrawn, the luminosity gradually subsided. The luminous power evidently resided in a slimy secretion which enveloped the animal, and which was freely communicated to water, as well as to any solid object. When thus detached, it could be made to exhibit the same phosphoric phenomena as the medusa itself; hence, it is reasonable to suppose, that the gleam of the ocean arose no less from the luminous matter detached from these creatures than from that which adhered to them; and I was further satisfied on this point, when I found that immersing the medusa in perfectly clear and fresh water communicated to that fluid all the scintillating properties of a luminous sea. Though the discovery of these medusæ was a satisfactory explanation of the phosphorescent appearance of the water, I had yet to learn that the latter effect was partly produced by living, bony, and perfectly organized fish: such fish were numerous in the sea this night; and a tow-net captured ten of them in the space of a few hours. They were a species of *Scopelus*, three inches in length, covered with scales of a steel-grey colour, and the fins spotted with grey. Each side of the margin of the abdomen was occupied by a single row of small and circular depressions, of the same metallic-grey hue as the scales; a few similar depressions being also scattered on the sides, but with less regularity. The examples we obtained were alive when taken from the net, and swam actively upon being placed in a vessel of sea water. When handled, or swimming, they emitted a vivid phosphorescent light from the scales, or plates, covering the body and head, as well as from the circular depressions on the abdomen and sides, and which presented the appearance of as many small stars, spangling the surface of the skin. The luminous gleam (which had sometimes an intermittent or twinkling character, and at others shone steadily for several minutes together) entirely disappeared after the death of the fish."—In a paper by this author, entitled "Observations on the Phosphorescence of the Ocean, made during a voyage from England to Sydney, N. S. Wales," which was read at one of the meetings of the Linnæan Society, he remarks, that the sea, when phosphorescent, exhibits two distinct kinds of luminosity, one in which its surface appears studded with scintillations of the most vivid description, more particularly apparent as the waves are broken by the violence of the wind or by the passage of the ship through them, as though they were electric sparks produced by the collision, and which scintillations he considers are probably influenced, in some measure, by an electric condition of the atmosphere, as at those particular times they were observed to be much more vivid and incessant than at others. The other kind of luminosity spoken of has more the appearance of sheets or trains of whitish or greenish light, often sufficiently brilliant to illuminate the vessel as it passes through, being produced by various species of *salpa*, *beroe*, and other *mollusca*, while in the former case the scintillations which adhere in myriads to the towing net when drawn out of the water, probably originate in animalcules so minute that the only indication of their presence is the light which they emit. He further says, that the diffusion of the phosphoric light possessed by these mollusca does not solely depend on the creatures being disturbed (such as the passage of the ship through the water, or other somewhat similar causes), is evident, as a luminous mass may frequently be observed to gradually diffuse its brilliant light at some distance from the ship, without any apparent disturbance; and often during calm nights a similar glow of light is diffused over the water, without there being any collision of the waves to bring it forth; and if a light breeze springs up during the same night, the passage of the vessel leaves no brilliant trace in its wake, although the same spontaneous diffusion of light is observed in the water at some distance to be repeated as before; the phosphoric light being confined apparently solely to the occasional groups of mollusca, which when we succeeded in capturing them in the towing net, resembled for the most part pieces of crystal cut into various fantastic forms, round, oval, hexagonal, heptagonal, &c.——Many insects, like the lantern-fly, glow-worm, &c., emit a strong phosphoric light; so do various minerals. Sulphate of barytes gives a bright green light, acetate of potash a brilliant green light, and rock crystal, a red and then white light. Temperature has a marked effect on the emission of light by these bodies. When they are shining, the luminous appearance ceases if they are exposed to the cold of a freezing mixture. It becomes more vivid by applying heat; and if it has ceased, it may be renewed by applying a stronger heat, so that a piece of any solar

phosphorus, which has apparently lost its power, may by heat be again made to shine. In the article "GLOW-WORM" will be seen some interesting particulars of that insect's lucid properties. To which we may here add that if a glow-worm is crushed, and the hands and face are rubbed with it, they exhibit a luminous appearance similar to that produced from phosphorus: also when a glow-worm is put into a phial, and the phial is immersed in water, a very beautiful irradiation takes place.

PHOSPHORIC ACID, in chemistry, an acid formed by a saturated combination of phosphorus and oxygen. When phosphorus undergoes combustion in oxygen gas, a great quantity of white fumes are produced and deposited in white flakes, and to this substance the name of *phosphoric acid* is given. It is generally manufactured from *bones*, which consist of phosphate of lime: but there are also other processes for obtaining it. Its component parts are 60 parts of oxygen and 40 of phosphorus. It combines with alkalies, earths, and metallic oxydes, forming with them salts denominated *phosphates*.——The *phosphorous acid*, which contains a smaller proportion of oxygen than the phosphoric acid, is obtained by the slow combustion of phosphorus at the common temperature of the air. Phosphorous acid forms compounds with alkalies, earths, and metallic oxydes, which are known under the name of *phosphites*.

PHOS'PHORITE, in mineralogy, a species of calcareous earth.

PHOS'PHORUS, in chemistry, a yellowish semi-transparent substance, of the consistence of wax, but brittle in cold frosty weather. In atmospheric air, it is luminous at common temperatures without emitting any material heat. It has a rough, disagreeable taste, and its odour resembles garlic. It is a compound of hydrogen with fermenting matters, by which the hydrogen is so gradually excited and evolved, and so masked, as to exhibit a slow combustion at the low heat of 44°; but on the excitement being increased to 148°, it rapidly combines with the oxygen of the air, burns with intense brilliancy, and displays a vivid flame, the union constituting phosphoric acid. Phosphorus dissolves in fat oils, forming a solution luminous in the dark at ordinary temperatures. A phial half filled with this oil, being shaken and suddenly uncorked, will give light enough to see the dial of a watch by night.——Inflammable match-boxes are usually prepared by putting into a small phial of glass or lead a bit of phosphorus, and oxydizing it slightly by stirring it round with a red-hot iron wire. The phial should be unstopped only at the instant of plunging into it the tip of the sulphur match which we wish to kindle. The process of making phosphorus is as follows:—100 parts of burnt bones in powder are to be mixed with 40 parts of sulphuric acid, and they are to be suffered to remain in contact for two days, the mixture being frequently stirred. The whole is then to be poured upon a filter of cloth, and the liquor that passes through is to be added to a nitrous solution of lead; a white powder will be formed; this must be mixed with about one-fifth of its weight of charcoal powder, and exposed to a strong red heat in a porcelain retort, the bank of which is plunged in water; much gaseous matter will come over, some of which will inflame spontaneously, and at length a substance will drop out of the neck of the retort, and congeal under the water, which is phosphorus.

PHOS'PHURET, in chemistry, a combination of phosphorus not oxygenated with a base; as phosphuret of iron, copper, or of lime, &c.——*Phosphuretted hydrogen*, is phosphorus dissolved in hydrogen gas, which when it comes in contact with common air burns with great rapidity, and if mixed with that air it detonates violently. Oxygen gas produces a still more rapid combustion than common air. When bubbles of it are made to pass up through water, they explode in succession as they reach the surface of the liquid, and a beautiful column of white smoke is formed. This gas is the most combustible substance known. Its combustion is the combination of its phosphorus and hydrogen with the oxygen of the atmosphere, and the products are phosphoric acid and water. It is supposed that many of those lights which are said to have been seen at night around burying-grounds and other places, when animal and vegetable substances are undergoing decomposition, arise, in part at least, from phosphuretted hydrogen.——*Byhydruret of phosphorus* is a second compound of hydrogen with phosphorus, obtained when solid phosphorous acid is heated out of contact with the air; the oxygen of the water of crystalization present converts part of the phosphorous acid into the phosphoric, while the hydrogen, uniting with a small proportion of phosphorus forms this gas. It is not spontaneously inflammable, but detonates when mixed with atmospheric air and heated to 212 degrees.

PHOTOGEN'IC DRAW'ING, the name given by Mr. H. F. Talbot, the inventor or discoverer of it, to a "new art," which, though not identical, is very similar to that of M. Daguerre; an account of which we have given, under the word DAGUERROTYPE. As this is a subject which has lately occupied the attention of artists and men of science generally, in no ordinary degree, and as important results are expected from it, we trust we shall be excused if we devote somewhat more than our usual maximum of space in laying it before our readers. Great zeal was exhibited in supporting the claims of the rival inventors, by their respective advocates on each side of the Channel, and every periodical devoted to the arts lent its willing pages to the full and free discussion of it. Foremost among these were the *Literary Gazette* and *Athenæum*; from the former of which we take the liberty of extracting a very explanatory account of it by Mr. Talbot himself:—"Many instruments have been devised at

various times for abridging the labour of the artist in copying natural objects, and for insuring greater accuracy in the design than can be readily attained without such assistance. Among these may be more particularly mentioned the Camera Obscura and the Camera Lucida, which are familiar to most persons; certainly very ingenious and beautiful instruments, and in many circumstances eminently useful, especially the latter. Yet are there many persons who do not succeed in using them, and I believe that few are able to do so with great success, except those who, in other respects, are skilled in drawing. Up to a certain point, these inventions are excellent; beyond that point they do not go. They assist the artist in his work; they do not work for him. They do not dispense with his time; nor with his skill; nor his attention. All they can do is to guide his eye and correct his judgment; but the actual performance of the drawing must be his own. From all these prior ones, the present invention differs totally in this respect (which may be explained in a single sentence), viz. that, by means of this contrivance, it is not the artist who makes the picture, but the picture which makes itself. All that the artist does is to dispose the apparatus before the object whose image he requires: he then leaves it for a certain time, greater or less, according to circumstances. At the end of the time he returns, takes out his picture, and finds it finished. The agent in this operation is *solar light*, which being thrown by a lens upon a sheet of prepared paper, stamps upon it the image of the object, whatever that may chance to be, which is placed before it. The very foundation of the art, therefore, consists in this—eminently curious—natural fact, viz. that there exists a substance so sensitive to light as to be capable of receiving even its faint impressions. The whole possibility of the process depends upon this; for if no such substance existed *in rerum naturâ*, the notion of thus copying objects would be nothing more than a scientific dream. Moreover, it is not sufficient that the paper should be so sensitive as to receive the impressions of external objects; it is requisite also, that, having received them, it should retain them; and, moreover, that it should be insensible with regard to other objects to which it may be subsequently exposed. The necessity of this is obvious, for otherwise new impressions would be received, which would confuse and efface the former ones. But it is easier to perceive the necessity of the thing required than to attain to its realization. And this has hitherto proved a most serious obstacle to those who have experimented with this object in view. This was one of the few scientific inquiries in which Sir Humphry Davy engaged, upon which fortune did not smile. Either his inquiries took a wrong direction, or else, perhaps, the property sought for was of so singular a nature, that there was nothing to guide the search, or perhaps he despaired of it too soon; however this may be, the result undoubtedly was, that the attempt proved unsuccessful, and was abandoned. As Sir Humphry Davy himself informs us, 'No attempts have as yet been successful.' These words are quoted from his own account in the 'Journal of the Royal Institution for 1802.' The subject then dropped, and appears to have been no more spoken of for upwards of thirty years. When, in 1834, unaware of Davy's researches, I undertook a course of experiments with the same object in view, I know not what good star seconded my efforts; but, after various trials, I succeeded in hitting upon a method of obtaining this desideratum. By this process, it is possible to destroy the sensibility of the paper, and to render it quite insensible. After this change it may be exposed with safety to the light of day; it may even be placed in the sunshine: indeed, I have specimens which have been left an hour in the sun without having received apparent deterioration. A fact, therefore, is thus established which is not without its importance in a theoretical point of view, besides its more immediate application to purposes of utility. With this kind of paper, eminently susceptible of being acted on by light, and yet capable of losing that property when required, a great number of curious performances may readily be accomplished. The most remarkable of these, is undoubtedly the copying the portrait of a distant object, as the façade of a building, by fixing its image in the camera obscura; but one perhaps more calculated for universal use is the power of depicting exact fac-similes of smaller objects which are in the vicinity of the operator, such as flowers, leaves, engravings, &c., which may be accomplished with great facility, and often with a degree of rapidity that is almost marvellous. The specimens of this art which I exhibited at the Royal Institution, though consisting only of what I happened to have with me in town, are yet sufficient to give a general idea of it, and to show the wide range of its applicability. Among them were pictures of flowers and leaves; a pattern of lace; figures taken from painted glass; a view of Venice copied from an engraving; some images formed by the solar microscope, viz. a slice of wood very highly magnified, exhibiting the pores of two kinds, one set much smaller than the other, and more numerous. Another microscopic sketch, exhibiting the reticulations on the wing of an insect. Finally: various pictures, representing the architecture of my house in the country; all these made with the camera obscura in the summer of 1835. And this I believe to be the first instance on record, of a house having painted its own portrait. A person unacquainted with the process, if told that nothing of all this was executed by the hand, must imagine that one has at one's call the genius of Aladdin's lamp. And, indeed, it may almost be said, that this is something of the same kind. It is a little bit of magic

realised:—of natural magic. You make the powers of nature work for you, and no wonder that your work is well and quickly done. No matter whether the subject be large or small, simple or complicated; whether the flower-branch which you wish to copy contains one blossom, or one thousand; you set the instrument in action, the allotted time elapses, and you find the picture finished, in every part, and in every minute particular. There is something in this rapidity and perfection of execution, which is very wonderful. But after all, what *is* nature, but one great field of wonders past our comprehension? Those, indeed, which are of every-day occurrence, do not habitually strike us, on account of their familiarity, but they are not the less on that account essential portions of the same wonderful whole. I hope it will be borne in mind by those who take an interest in this subject, that in what I have hitherto done, I do not profess to have perfected an art, but to have commenced one; the limits of which it is not possible at present exactly to ascertain. I only claim to have based this new art upon a secure foundation: it will be for more skilful hands than mine to rear the superstructure."—The above appeared in the Literary Gazette, Feb. 2, 1839; and to make the articles (viz. DAGUERREOTYPE and PHOTOGENIC DRAWING) more complete, we go to the same source (May 23, 1840), for the *Discovery of a method of permanently fixing, engraving, and printing from Daguerréotyphy, by Dr. Berres, of Vienna*, as in the case of ordinary copper-plates. This the editor designates "the FIRST GRAND USEFUL STEP in advance upon the new invention, and portends such a revolution in many processes (particularly engraving) now carried on by other means, as to be of universal importance." Dr. Berres, whose communication was addressed to the Imperial Society of Physicians at Vienna, after stating the powerful reasons which induced him to attempt what M. Daguerre had declared he gave up all hopes of realizing, thus describes the process:—"1. The necessary copperplates, as they are used at present in the daguerréotyphic plan, can effect only the permanently fixing, never the etching and printing, of copies therefrom. 2. In the heliographic etchings it is necessary that the picture be produced with the requisite intensity upon pure chemical silver plates. 3. The etching of the daguerréotyphic picture is produced through the influence of nitric acid, to be explained hereafter. 4. For the permanent fixing of the daguerréotyphic picture, a galvanic power is necessary. 5. For the changing of the daguerréotyphic picture into a deep metal etching, so as to be used as a means of printing, the chemical process of etching is finally of itself sufficient. My newly discovered method of managing the daguerréotyphic productions may be divided into two proceedings. 1. That of permanently fixing the design. 2. The changing the design, when once permanently fixed, into an etching upon the plate. The method of permanently fixing the daguerréotyphic design, with a transparent metal coating, consists in the following process:—I take the designs produced in the usual manner by the daguerréotyphic process, hold them for some minutes over a moderately warmed nitric acid vapour, or steam, and then lay them in nitric acid of 13° or 14° (Reaumur), in which a considerable quantity of copper or silver, or both together, has been previously dissolved. Shortly after being placed therein, a precipitate of metal is formed, and can now be changed to what degree of intensity I desire. Now I take the heliographic picture, coated with metal, place it in water, clean it, dry it, polish it with chalk or magnesia, and a dry cloth or soft leather. After this proceeding the coating will become clean, clear, and transparent, so that the picture can again, with all its properties, be easily seen. The greatest care and attention are required in preparing the daguerréotyphic impressions intended to be printed from. The picture must be carefully freed from iodine, and prepared upon a plate of the most chemically pure silver. That the production of this picture should be certain of succeeding, according to the experiments of Mr. Kratochwila, it is necessary to unite a silver with a copper plate; while, upon other occasions, without being able to explain the reasons, deep etchings or impressions are produced, without the assistance of the copper plate, upon pure silver plate. The plate has now to be varnished upon the spot where the acid ought not to have dropped. Next, after being held for one or two minutes over a weak warm vapour or steam, of 25° to 30° (Reaumur) of nitric acid, there must be poured over it a solution of gum Arabic, of the consistence of honey, and it must be placed in a horizontal position, with the impression uppermost, for some minutes. Then I plunge the plate, by means of a kind of double pincette, whose ends are protected by a coating of asphalt, or hard wood, in nitric acid, at 12° or 13° (Reaumur). Let the coating of gum slowly melt off, or disappear, and commence now to add, though carefully and gradually, and at a distance from the picture, a solution of nitric acid, of from 25° to 30°, for the purpose of deepening or increasing the etching power of the solution. After the acid has arrived at 16° to 17° (Reaumur), and gives off a peculiarly biting vapour, which powerfully affects the sense of smelling, the metal becomes softened; and then, generally at this point, the process commences of changing the shadow upon the plate into a deep engraving or etching. This is the decisive moment, and upon it must be bestowed the deepest attention. The best method of proving if the acid be strong enough is to apply a drop from that in which the plate now lies to another plate: if the acid make no impression, it is of course necessary to continue adding nitric acid; if, however, it corrode too deeply, then it is necessary to add water, the acid being too strong. The

THE INVENTION OF OIL-PAINTING ENABLED THE "OLD MASTERS" TO PRODUCE ENCHANTMENTS IN THE ART WHOLLY UNKNOWN BEFORE.

greatest care must be bestowed upon this process. If the potency of the acid have been carried too far, a fermentation and white froth will cover the whole picture, and thus not alone the surface of the picture, but also the whole surface of the plate will quickly be corroded. When, by a proper strength of the etching powers of the acid, a soft and expressive outline of the picture shall be produced, then may we hope to finish the undertaking favourably. We have now only to guard against an ill-measured division of the acid, and the avoidance of a precipitate. To attain this end, I frequently lift the plate out of the fluid, taking care that the etching power shall be induced to whatever part it may work the least; and seek to avoid the bubbles and precipitate by a gentle movement of the acid. In this manner the process can be continually applied to the proper points of strength and clearness of etching required upon the plates, from which it is proposed to print. I believe that a man of talent, who might be intrusted with this art of etching, and who had acquired a certain degree of dexterity in preparing for it, would very soon arrive at the greatest clearness and perfection, and from my experience, I consider, would soon be able to simplify the whole process. I have tried very often to omit the steaming, and the gum Arabic, but the result was not satisfactory, or the picture, very soon after, was entirely destroyed; so that I was compelled again to have recourse to them. The task which I have undertaken is now fully performed by placing in the hand of this learned body my method of etching and printing from the daguerréotyphic prints, which information being united to the knowledge and mechanical experience we already possess, and published to the world, may open a road to extensive improvements in the arts and sciences."

PHOTOM'ETER, an apparatus for measuring the intensity of light, or an instrument intended to indicate the different quantities of light, as in a cloudy or bright day, or between bodies illuminated in different degrees. Instruments for this purpose have been invented by Count Rumford, M. de Saussure, Mr. Leslie, and others. In Leslie's photometer the essential part is a glass tube, like a reversed siphon, whose two branches should be equal in height, and terminated by balls of equal diameter; one of the balls is of black enamel, and the other of common glass, into which is put some liquid. When the instrument is exposed to the solar rays, those rays that are absorbed by the dark colour heat the interior air, which causes the liquor to descend with rapidity in the corresponding branch, thus marking the intensity of the light; while no effect whatever is produced by the light upon the transparent ball.

PHRASE, a short sentence or expression; said to be *complete* when it conveys complete sense, as "to err is human"; and *incomplete* when it consists of several words without affirming anything. Any peculiar sentence or short idiomatic expression is also denominated a *phrase*.——In music, any regular symmetrical course of notes which begin and complete the intended expression.

PHREN'ITIS, in medicine, inflammation of the brain, attended with acute fever and delirium.

PHRENOL'OGY, a modern science, which professes to teach, from the conformation of the human skull, the particular characters and propensities of men, presuming that the powers of the mind and the sensations are performed by peculiar parts of the brain: the front parts being intellectual, the middle sentimental, and the hinder parts governing the animal propensities; the degree being in proportion to the projection or bulk of the parts. It was long ago observed by physiologists, that the characters of animals were determinable by the formation of the forehead, and that the intelligence of the animal, in most cases, rose or fell in proportion to the elevation or depression of the skull. But it was reserved to Drs. Gall and Spurzheim to expand this germ of doctrine into a minute system, and to map out the whole cranium into small sections, each section being the dwelling-place, or workshop, of a certain faculty, propensity, or sentiment, in all amounting to thirty-six, and to which certain names have been given in order to mark their specific qualities, their uses and abuses. Were phrenology an established science, and were it possible to draw unerring deductions from the data which it lays down, its discovery would be the greatest step ever made in mental philosophy, and its application the most beneficial ever used for the amelioration of the human race. By disclosing individual character, it would give security to social intercourse, and make communication prompt and easy. It would disclose real merit and expose unworthiness. The truly wise and good would at last attain their proper station in society; while the ignorant and vicious would be obliged to hide their diminished heads. But neither is phrenology an established science, nor, if it were, can it ever be applied with certainty to the illustration of individual character. Many of the organs are so heterogeneous in their nature, that they may indicate faculties or dispositions diametrically opposite, while others are furnished with compensating organs which balance the good or the evil of either, and thus render both ineffective. Thus you may have the organ of *destructiveness* developed largely, and yet be a peaceable and good man. How is this accounted for? Your organs of *cautiousness* and *benevolence* are brought to bear upon it, so that it is tamed down into a very harmless affair, and would not even hurt a fly. This fact ought never to be lost sight of; nor should we forget that although phrenologists have mapped the outer cranium into so many sections, no corresponding sections or divisions are to be found in the interior structure or arrangement of the brain. Were the brain divided into

thirty-six cells, phrenologists might be justified in making out its exterior divisions; but it consists of one mass, and there is no kind of inward separation or distinction of structure corresponding with the outward boundaries of phrenological organs. We must confess, that, like other theoretical fancies which have occasionally sprung up, it has furnished a large fund of amusement, if not of instruction, and also given rise to many sagacious remarks from its votaries, upon the naughty propensities or amiable affections of their friends. But it may be worth while, at the same time, to inquire whether the advocates of phrenology have not discovered that they themselves possess some fondly cherished bump, by which their own exemplary character has been proved to their entire satisfaction, and so, out of pure gratitude to the science, had become its willing converts! We have more than once seen a lecturer arrange his craniological specimens, from the classic models of ancient Greece down to the orang-outang, and heard him descant, in marvellously learned terms, respecting the indications of amativeness, secretiveness, or destructiveness, &c., which they severally presented, and yet we still find ourselves in a most deplorable state of unbelief. It ought not therefore to surprise our readers if we endeavour to justify our heterodoxy, by quoting the following argumentative observations, which formerly appeared in the *Edinburgh Review*:—"The great boast of phrenology," says the reviewer, "is, that it does not rest on fantastical and arbitrary abstractions, but on a correct observation of the varieties of actual character, and is applied, not to a mere speculative and shadowy analysis of supposed qualities, but to the undeniable realities by which men are distinguished in common life. It takes no cognizance of such questionable existences as perception, memory, imagination, or judgment, but looks at once to the peculiarities by which the conduct and characters of men in society are marked to ordinary observation. Thus it finds one man actuated in all his conduct by a strong desire of fame, and immediately it sets down 'love of approbation' as an original principle of our nature, and looks about for a bump on some vacant part of the skull, by the sign of which the strength of this propensity may be measured. Another is distinguished by his love of money, and so Acquisitiveness is established as a primitive and inherent propensity! Another is a great talker, and forthwith Language is made a distinct and independent faculty! Another has a turn for making nut-crackers and mouse-traps, and what can be so natural as to refer this to the bulk of his organ of Constructiveness? Another shows a great love for children, without indicating much benevolence to any grown creature—and nothing consequently can be plainer than that Philoprogenitiveness is an original sentiment. Some are quick at arithmetical operations—and what explanation can be so satisfactory, as that they have the faculty of Number very prominent? Others remember all the cross-roads they have ever gone through—and who can deny, therefore, that they are distinguished for their Locality? Some keep their papers, clothes, and furniture very nicely arranged—which can be attributed only to the degree in which they possess the faculty of Order; while there are others again, at least so Mr. Combe assures us, whose genius consists in peculiarly quick observation of size and weight of external substances—for whose sake accordingly it has been thought reasonable to create the special original faculties of size and weight! This, we must admit, is sufficiently simple and bold. But where is it to stop? If we are thus to take all the tastes, habits, accomplishments, and propensities, by which grown men are distinguished, in the concrete, and forthwith to refer them to some peculiar original faculty or principle, imagined for the mere purpose of accounting for them, the thirty-six original faculties of the phrenologists may at once be multiplied to 360 or 36,000, and room must be made upon the skull for as many new organs. Some men have a remarkable love for their children, and therefore we have a separate principle of *Philoprogenitiveness*. But other men have as remarkable a love for their parents—and why therefore should we not have a faculty of *Philoprogenitorness*, with a corresponding bump on some suitable place of the cranium? The affections of others, again, are less remarkable in the ascending and descending lines, and spread most kindly in the collateral. Can it be doubted, then, that we should have a Philadelphic principle, to attach us to our brothers and sisters—and another to keep us in charity with our cousins? If the fact, that some men are distinguished for their love of wealth is a sufficient ground for assuming that Acquisitiveness is an independent and original principle in our nature, should not the fact that other men being distinguished for their love of dogs and horses justify us in refering this also to an inherent principle? or upon what grounds can we refuse the same honour to the love of card-playing, gossiping, or agriculture? Some men, nay some whole families are notorious for lying, though addicted to no other immorality; some—the natural prey of the former—are proverbial for their credulity; some for inordinate merriment and laughter; some for envy; some for love of society; some for telling long stories; some for love of noise; some for horror of it. Most of these, it appears to us, are quite as well entitled to the rank of primitive faculties or propensities as any on the phrenologist's list. Undoubtedly they mark as conspicuously the characters and manners of the persons to whom they belong, and are not in general so easily resolved into more general principles. Why then should they be excluded from the scheme of the phrenologists, and left without any organs in their improvident distribution of the skull? Nay, upon these principles, why should there not be a

AS MAN'S STRENGTH IS LIMITED, SO LIKEWISE IS HIS KNOWLEDGE, AND THESE BOUNDS ARE SUITED TO HIS WANTS.

separate original faculty, prompting us to the practice of skating, sailing, or planting—or towards the study of botany, mineralogy, anatomy, bookbinding, chemistry, gymnastics, or any of the other five hundred pursuits to which idle men are found to betake themselves, with an engrossing and often passionate partiality?"

PHRYGA'NEA, in natural history, a genus of insects of the order *Neuroptera*, of which there are nearly sixty species. One of the largest species is the *Phryganea grandis*, about an inch in length. The larva of this insect is known by the name of the *cadew-worm*, and is frequently used by anglers as a bait. When arrived at full growth, it fastens its case or tube by several silken filaments to the stem of some water plant, or other convenient substance, in such a manner as to project a little above the surface of the water, and, casting its skin, changes to a chrysalis of a lengthened shape, displaying the immature limbs of the future phryganea, which in a fortnight emerges from its confinement.

PHRY"GIAN STONE, a light spungy stone resembling a pumice, formerly used in dyeing, and said to be drying and astringent.

PHTHI'SIS, in medicine, a consumption occasioned by ulcerated lungs. [See CONSUMPTION.]

PHYLAC'TERY, among the ancients, a general name given to all kinds of spells, charms, or amulets, which they wore about them, to preserve them from disease or danger. It is more particularly used to signify a slip of paper on which was written some text of Scripture, especially of the Decalogue, which the more devout Jews wore on the forehead, breast, or neck, as a badge of their religion.——Among the primitive Christians, a *phylactery* was a case in which they inclosed the relics of the dead.

PHYL'LITE, in the history of fossils, a petrified leaf, or a mineral having the figure of a leaf.

PHYS'ALITE (sometimes called *pyrophysalite*, because it intumesces in heat), a mineral of a greenish white colour, a subspecies of prismatic topaz.

PHYS'ETER, the *cachalot*, in natural history, a genus of mammalia of the order *cete*. There are four species: the *Physeter macrocephalus*, or the spermaceti whale, grows to the length of sixty feet, and the head is nearly one-third of the bulk of the whole animal. It is one of the most difficult of all the whales to be taken, and survives for several days the deepest wounds given it by the harpoon. Its skin, oil, and tendons are all converted by the Greenlanders to some valuable purpose. The spermaceti is found in the head. Ambergris is obtained from the fæces of the animals. The origin of this substance had long baffled the curiosity of the naturalist, but is now said to be unquestionably ascertained.

PHYS'ICAL, an epithet denoting that which relates to nature or natural productions, as opposed to things moral or imaginary. We speak of physical force or power, with reference to material things: thus, armies and navies are the *physical* force of a nation; whereas knowledge, skill, &c., constitute *moral* force.——*A physical body* or substance, is a material body or substance, in distinction from spirit or metaphysical substance.——*Physical education*, the education which is directed to the object of giving strength, health, and vigour to the bodily organs and powers.

PHYSI"CIAN, one whose profession is to prescribe remedies for diseases, and who is consequently relied on as being skilled in the art of healing. Physicians were held in high estimation in Greece, and the name of Hippocrates is an honour to the profession. The study of physic, indeed, being looked upon as a branch of philosophy, it was sure to command respect in a land where philosophy was in such high repute. It was not exactly so in Rome. As long as the Romans led a hardy and laborious life, physicians were dispensed with, and totally unknown amongst them, without any bad consequence ensuing. But the luxury of the table, and the excesses with which it was attended, introduced diseases; and as one evil produces another, so diseases introduced physic, to which they had before expressed much repugnance. In the 535th year of Rome, some physicians had come from Greece to that city, but had no fixed establishment there till the year 600. Physic at that time included pharmacy and surgery; for physicians not only compounded medicines, but performed all surgical operations themselves, though they had then but a very imperfect knowledge of anatomy. During the commonwealth there were no physicians or surgeons in the army, but the ancient citizens, who had almost all served in the army, administered medicines, and the soldiers dressed each other's wounds with some well-known remedies used in the city. The emperors, however, having a particular respect to their own health, took physicians upon every expedition. The art of healing was not held in high estimation at Rome, but was sometimes professed by slaves; Cæsar granted them, as a singular favour, the freedom of the city; and their reputation increased with the luxury of the people.

PHYS'ICO-THEOL'OGY, theology or divinity illustrated or enforced by physics or natural philosophy.

PHYS'ICS, or NATURAL PHILOSOPHY, a science of vast extent, comprehending whatever tends to elucidate the doctrine of natural bodies, their phenomena, causes, and effects, with their various affections, motions, and operations.

PHYSIOGNOM'ICS, among physicians, signs in the countenance which serve to indicate the state, disposition, &c., both of the body and mind: and hence the art of reducing these signs to practice is termed physiognomy.

PHYSIOG'NOMY, the art of discovering the predominant temper or other characteristic qualities of the mind by the features of the face or external signs of the counte

OUR REASON IS ALWAYS ATTENDED WITH SUCCESS IN UNITING THE TRUTHS OF EXPERIENCE WITH THE NECESSITIES OF LIFE.

THOUGH THE LIFE OF THE SOUL IS SUPERIOR TO THE LIFE OF THE BODY, YET THEIR MUTUAL OPERATION CANNOT BE DENIED.

nance. Whatever be thought of the possibility of laying down strict rules for such judgments, it is a fact of every-day occurrence, that we are, almost without reflection on our part, impressed favourably or unfavourably in regard to the temper and talents of others by the expression of their countenances. No study, says Lavater, mathematics excepted, more justly deserves to be termed a science than physiognomy. It is a department of physics, including theology and belles-lettres; and in the same manner with these sciences may be reduced to rule. It may acquire a fixed and appropriate character; it may be communicated and taught. Physiognomy, he adds, is a source of pure and exalted mental gratification. It affords a new view of the perfection of Deity; it displays a new scene of harmony and beauty in his works; it reveals internal motives, which, without it, would only have been discovered in the world to come. That it is a subject of great interest, every person of reflection will readily grant; but the student must be on his guard against a general application of rules with which the experience of others has furnished him. We all have some sort of intuitive method by which we form our opinions; and though our rules for judging of men from their appearance may often fail, we still continue to trust in them; and naturally feel surprised if a vacant-looking man should prove extremely sagacious, or a morose-looking one should give us evidence of his kind disposition by performing some generous and disinterested action.

PHYSIOG'NOTYPE, a machine for taking an exact imprint or cast of the countenance, lately invented by a Parisian. This instrument is a metallic, oval plate, pierced with a large quantity of minute holes very closely together, and through each of which a wire passes with extreme facility. These needles have the appearance of a brush. The whole is surrounded with a double case of tin, which contains warm water, in order to keep the instrument of a proper temperature with the blood. If any figure be applied against this brush of needles, it will yield to the slightest pressure, and leave an exact mould, taking up only about two seconds.

PHYSIOL'OGY, a term strictly signifying a discourse on nature; but usually confined to that branch of physical science which treats of the different functions and properties of living bodies: that is, of bodies which grow and reproduce their kind; a definition which includes vegetables and animals. It is distinct from physics in general, inasmuch as it regards organized bodies alone: and from metaphysics, inasmuch as it does not presume to treat of mind. Physiology is, in effect, what Dr. Darwin has called "zoonomia, or the laws of organic life." The functions of animal life are not only more complicated in the same individual than those of vegetation, but also more diversified in the different classes into which animals are divided: so that the physiology of each class has its peculiar laws.

PI'A MA'TER, in anatomy, the third tunic or membrane of the brain, which not only extends over the whole surface of the brain, but insinuates itself into all its cavities.

PIANO-FORTE, a musical stringed instrument, the strings of which are extended over bridges rising on the sounding-board, and are made to vibrate by means of small covered hammers, which are put in motion by keys. It has been gradually improved, till it has become one of the most important instruments in all domestic musical entertainments.

PIAZ'ZA, an Italian name for a portico or covered walk. The word literally signifies a broad open place or square; whence it came to be applied to the walks or porticoes surrounding them.

PI'CÆ, in ornithology, an order of birds in the Linnæan system under the class *Aves*, comprehending such as have their bill compressed and convex, including the parrot, crow, raven, magpie, cuckoo, jay, &c.

PICK'ET, or PIC'QUET, in military discipline, a certain number of men, horse or foot, who do duty as an outguard, to prevent surprises. Also, a punishment which consists in making the offender stand with one foot on a pointed stake.—*Pickets*, in fortification, sharp stakes, sometimes shod with iron, used in laying out ground, or for pinning the fascines of a battery. In the artillery, pickets five or six feet long are used to pin the park lines; in the camp, they are used about six or eight inches long to fix the tent cords, or five feet long in the cavalry camp to fasten the horses.

PIC'ROLITE, a green-coloured mineral, composed chiefly of the carbonate of magnesia.

PIC'ROMEL, the characteristic principle of bile; named from two Greek words, signifying *bitter* and *honey*, in allusion to its sharp, bitter and sweet taste.

PICROTOX'INE, or PICROTOX'IA, in chemistry, the bitter and poisonous principle of the cocculus Indicus. It crystalizes in small white needles or columns.

PICTS' WALL, an ancient wall begun by the emperor Adrian, A.D. 123, on the northern boundary of England, from Carlisle to Newcastle, to prevent the incursions of the Picts and Scots. It was first made only of turf, strengthened with palisades, till the emperor Severus coming in person into Britain, had it built with stone; and Actius, the Roman general, rebuilt it with brick, A.D. 430. Some remains of this wall are still visible in parts of Northumberland and Cumberland.

PICTURESQUE, an epithet denoting that peculiar kind of beauty which, either in a prospect, a painting, or a description, strikes the mind with great power, or imparts to it agreeable sensations. In the theory of the arts, the word *picturesque* is used as contradistinguished from *poetic* and *plastic*. The *poetical* has reference to the fundamental idea to be represented,—to the painter's conception of his subject; whilst

THE ARTERIAL SYSTEM PENETRATES EVERY ORGAN, AND EVERY ORGAN GIVES TO THE MATTER THUS RECEIVED ITS PECULIAR CHARACTER.

the *picturesque* relates to the mode of expressing the conception, the grouping, the distribution of objects, persons, and lights. The poetical part of a picture, as well as its mechanical execution, may be without fault, and yet the picture be a total failure as regards the picturesque.

PIECE, in commerce, signifies sometimes a whole, and sometimes a part of the whole. In the first sense, we say a *piece* of cloth, &c. meaning a certain quantity of yards regulated by custom; being yet entire and uncut. In literature, we speak of a short composition, in prose or verse, as a *piece;* and in the same way of a musical composition, as a *piece* of music.——*Pieces*, in the military art, include all sorts of cannon and mortars. Large guns are called battering-pieces; smaller guns are called field-pieces. We also say, a fowling-piece. ——In heraldry, the honourable *pieces* of the shield are the chief, fesse, bend, pale, bar, cross, saltier, chevron, and in general all those which may take up one-third of the field.

PIE'POUDRE, an ancient court of record, incident to every fair or market, and of which the steward of him who has the toll of the market is the judge. According to the most satisfactory derivation, the term implies that the court is that of petty dealers or chapmen, who assemble on those occasions. It was instituted to administer justice for all commercial injuries done in that very fair or market, and not in any preceding one; so that the injury must be done, complained of, heard, and determined within the compass of one and the same day, unless the fair continues longer.

PIER, a very strong stone wall or mass of solid stone work running into the water, to resist the force of the sea, to support the arches of a bridge, or the quay of a wharf, and to withstand the dashing of waves.—Also, a part of the wall of a house between windows.

PIE'RIAN, an epithet given to the muses, from Mount Pierus, in Thessaly, which was sacred to them; or from their victory over the nine daughters of the Macedonian king Pierus.

PI'ETIST, a person belonging to a sect of Protestants which sprung up in Germany, in the latter part of the 17th century. They professed great strictness and purity of life, affecting to despise learning and ecclesiastical polity, as also forms and ceremonies in religion, and giving themselves up to mystic theology.

PI'ETY, that holy principle which consists in veneration accompanied with love for the Supreme Being; and which manifests itself, in practice, by obedience to God's will and a pure devotion to his service.—Piety both towards God and man was one of the virtues held in most esteem by the ancients, and is therefore commemorated on innumerable medals, sometimes under the figure of a female carrying children, or of Æneas bearing his father, &c., but more frequently under that of a female standing at an altar.

PIEZOM'ETER, an instrument for ascertaining the compressibility of water, and the degree of such compressibility under any given weight.

PI"GEON, in ornithology, a domestic bird of the genus *Columba*, of which there are many varieties, as the *rock* pigeon, the *carrier* pigeon, *powters*, *shakers*, *tumblers*, *croppers*, *runts*, &c., names which are indicative of their respective peculiarities.—In their wild state the pigeon tribe live on high trees, generally in flocks. They feed principally on seed, retaining their food in the crop for some time. The greater proportion of the species build on elevated situations, forming a loose nest of small twigs, and wide enough to contain both the parent birds: the female lays two eggs, several times a year. They pair for life, though they assemble in flocks; and have no song, their note being a simple cooing. They walk well, and fly with great swiftness, continuing on the wing for a long time. Of all the varieties of the pigeon, the most remarkable for its attachment to its native place is the *carrier*, which is distinguished from the others by a broad circle of naked white skin round the eyes. This species has for ages been used for carrying messages of importance where expedition and secrecy were required. When a letter is tied under the carrier's wing, and the bird is set at liberty, from some inconceivable instinct it directs its flight, in a straight line, to the very spot from whence it had been taken.—In America there is a species of pigeons called the passenger or wild pigeon, which abounds most prolifically, and is of a bluish slate-colour with a white belly. These birds visit the different states in innumerable quantities, but are beyond measure abundant in the western states, where, according to Wilson, the ornithologist, some of their "breeding places," as they are termed, extend over a space of thirty or forty miles. They are taken by means of clap-nets, managed by a person concealed in a hut composed of brushwood, who in this way will sometimes take from ten to forty or fifty dozens at a sweep. Audubon, in speaking of these immense flocks of pigeons, and their extraordinary powers of flight, remarks, that they have been killed in the neighbourhood of New York, with their crops still filled with rice, collected by them in the fields of Georgia and Carolina, the nearest point at which this supply could possibly have been obtained; and as it is well ascertained that, owing to their great power of digestion, they will decompose food entirely in twelve hours, they must have travelled between 300 and 400 miles in six hours, making their speed at an average of about one mile in a minute: and this would enable one of these birds, if so inclined, to visit the European continent, as swallows undoubtedly are able to do, in a couple of days. Such, indeed, are their numbers, that the air is described as "literally filled with pigeons; the light of the noon-day becomes dim, as during an

THE GREAT SOURCE OF PICTURESQUE BEAUTY IS NATURE IN ALL HER ORIGINAL VARIETY AND IRREGULAR GRANDEUR.

OBJECTS MAY BE MADE PICTURESQUE, BUT WE ARE LIKELY TO MISS THE PICTURESQUE AND FALL INTO THE RIDICULOUS.

eclipse." It may not, perhaps, be out of place to attempt an estimate of the number of pigeons contained in one of those mighty flocks, and the quantity of food daily consumed by its members. The inquiry will show the astonishing bounty of the Creator in His works, and how universally this bounty has been granted to every living thing on the vast continent of America. We shall take, for example, a column of one mile in breadth, which is far below the average size, and suppose it passing over us without interruption for three hours, at the rate mentioned above, of one mile per minute. This will give us a parallelogram of 180 miles by 1, covering 180 square miles; and allowing two pigeons to the square yard, we have 1,115,136,000 pigeons in one flock; and as every pigeon consumes fully half-a-pint of food per day, the quantity must be 8,712,000 bushels per day, which is required to feed such a flock.—— Only four species of the common pigeon are found wild in Europe, from one of which are descended all the varieties which are found domesticated. Of the *gallinaceous*, the great-crowned pigeon, or gouza, bears the greatest resemblance to the *Gallinæ* in size; it is a native of New Guinea, and various isles of the Eastern Archipelago. The Nicobar pigeon is distinguished for its brilliant plumage: it runs along the ground, and builds its nest like a partridge's: it inhabits Sumatra, Nicobar, and other islands in the East. Of the ordinary pigeons, the ring pigeon is the largest, and is migratory. The stock pigeon has an affinity to the former kind, but flies in large flocks, and emigrates about October. The biset lives in flocks, and nestles in the holes of trees, and in rocks.——Pigeons range to a great distance for food, particularly for salt; and they are much distressed by excess of cold or heat.

PIG'MENTS, preparations of various kinds used in painting and dyeing, to impart the colours required. They are obtained from animal, vegetable, and mineral substances.

PIKE, in ichthyology, a fish of the genus *Esox*, which abounds in most of the lakes of Europe. It is remarkable for its voracity, and also for its longevity.——*Pike*, in military affairs, a long slender staff with a pike or spike at the end. Its use among soldiers is superseded by the bayonet.

PILASTER, in architecture, a square column, sometimes insulated, but more frequently pilasters are set within a wall, and project only one-quarter of their diameter. The pilaster is different in different orders; it borrows the name of each, and has the same proportions, and the same capitals, members and ornaments, with the columns themselves.

PIL'CHARD (*clupea pilcardus*), in ichthyology, a fish resembling the herring, but rounder and thicker. Pilchards appear on the Cornish coast about the middle of July, in immense numbers, and furnish a considerable article of commerce.

PILE, a large stake or beam, pointed and driven into the earth, as at the bottom of a river, or in a harbour, for the support of a bridge or other superstructure.——In heraldry, one of the lesser ordinaries, resembling a pile, as above described.——*Pile-driver*, a machine for driving pointed beams of wood into beds of rivers or soft foundations, on which to raise bridges and buildings.——*To pile arms*, in military tactics, is to place three muskets, with or without fixed bayonets, in such a relative position that the butts shall remain firm upon the ground, and the muzzles be close together in an oblique direction.——*Pile*, in coinage, a kind of puncheon, which, in the old way of coining with the hammer, contained the arms, or other figure and inscription, to be struck on the coin. We still call the arms-side of a piece of money the pile, and the head the cross, because, in ancient coins, a cross usually took the place of the head. ——The fine hairy substance on the surface of cloth, velvet, &c. is also called the *pile*.

PILEN'TUM, in antiquity, an easy kind of chariot used by the Roman ladies at games and religious processions.

PILE'US, in antiquity, a hat or cap worn by the Romans, during any indisposition which prevented them from appearing safely with their heads uncovered, as was the general custom. The *Pileus* was also worn by such as had lately received their freedom, because, on having their liberty granted, they were constantly shaved: the *Pileus* therefore being necessary on this account, was also esteemed a badge of liberty; hence *pileo donari* signifies to be made free.—— *Pileus*, in botany, the cap of a fungus, expanding horizontally, and covering the fructifications.

PIL'GRIM, one that travels to a distance from his own country to visit a holy place for devotional purposes. In the middle ages, kings, princes, bishops, and others made *pilgrimages* to visit the holy sepulchre at Jerusalem, in pious devotion to the Saviour. This was permitted while Palestine was held by the Saracens; but when the Turks obtained possession of that country, the Christian pilgrims were visited with the greatest indignities, and their repeated complaints occasioned the excitement which led to the crusades. In subsequent times pilgrimages to Rome, Compostella, Loretto, Tours, and other places where the relics of martyrs and saints attracted the notice of devotees, have been common; and pilgrims to this day travel to Rome, where they are provided for in establishments founded especially for their reception and entertainment.

PIL'LAR, a kind of irregular column, either too massive or too slender for regular architecture; the parts and proportions of which, not being restricted to any rules, are arbitrary.——In the upper compartment of the FRONTISPIECE to this volume will be seen the monumental pillar proposed to be erected, by public subscription, in Trafalgar-square, London, to commemorate the splendid achievements of Britain's greatest naval hero, the intrepid Nelson. It was re-

IN ENGLAND THE SHRINE OF ST. THOMAS A BECKET WAS THE CHIEF RESORT OF PILGRIMS, AND IN SCOTLAND ST. ANDREW'S.

solved to erect such a monument as should not only record the glorious deeds of him whose memory it was especially intended to honour, but also be a worthy memento of the prowess of the British navy, and an incentive to future deeds of heroism. Artists were accordingly invited to compete in producing plans for this national work; and from among the numerous designs which were submitted, the one by Mr. Railton (of which we give the particulars) was selected. The *pedestal* has on its four sides *bassi relievi* of Nelson's principal engagements. 1. The boarding of the San Joseph, at the battle off St. Vincent. 2. The battle of the Nile; Nelson, wounded, receiving from Captain Berry, in the cabin of the Vanguard, the sword of the commander of the Spartiate. 3. The interview at Copenhagen, between Nelson and the Crown Prince: and 4. The hero, fatally wounded, being carried from the deck of the Victory, at the battle of Trafalgar. Each of these compartments to be 18 feet square; and the figure of Nelson, in each, 7 feet high. The pedestal is raised on a flight of fifteen steps, at the angles of which are African lions in a recumbent posture. The *shaft* is fluted throughout, the base being richly ornamented, the lower torus with a cable, the upper with oak leaves. The *capital* is taken from the bold and simple example of MARS ULTOR, at Rome; and from it rises a circular pedestal, ornamented with a wreath of laurel and lions' heads, and surmounted by a statue of NELSON. A figure of Victory is introduced on every side of the capital. Dimensions: the *base*, 10 ft. high, 104 ft. wide; *pedestal*, 39 ft. high, 20ft. 6 in. wide; *base of column*, 9 ft. high; *shaft*, 90 ft. high, 12 ft. wide; *capital*, 14 ft. high; *statue*, 17 ft. high; *pedestal* for ditto, 14 ft. Total height, 193 feet. The estimated expense is 30,000*l.*; viz. masonry, 16,000*l.*, sculpture, 14,000*l.* A comparative view of this with other monumental pillars will enable the reader to form a better judgment of it.

Date.			Height of Capital.
118	Trajan's column,	Rome,	115 ft.
162	Antonine's column,	Rome,	123
1672	The Monument,	London,	172
1806	Napoleon's column,	Paris,	115
1832	Duke of York's,	London,	109
1840	Nelson's,	London,	162

[We beg to refer our readers to a sketch of the Life of Nelson, given at considerable length in our *Biographical Treasury*.]

PIL'LORY, an instrument of punishment, consisting of a frame of wood erected on posts, made to confine the head and hands of a criminal, in order to expose him to view, and to render him publicly infamous. According to Sir Henry Spelman, it was at first peculiarly intended for the punishment of bakers who should be found faulty in the weight or fineness of their bread. In 1816, this mode of punishment was abolished in all cases except that of perjury, and it has now altogether fallen into desuetude. ——It was anciently a post erected in a cross-road by the lord of the manor, with his arms upon it as a mark of his seignory, and sometimes with a collar to fix criminals to it.

PI'LOSE, in botany, hairy; a *pilose leaf* is one covered with long distinct hairs. A *pilose receptacle* has hairs between the florets.

PI'LOT, one who has the care of a ship and superintends the navigation, either along the sea coast, or upon the main ocean. In a stricter sense, a pilot is one whose profession it is to direct a ship's course when near the coast, and into and out of the harbours, bays, roads, or rivers, &c. within his peculiar district.——*Pilotage*, the compensation made or allowed to a pilot.

PI'LOT-FISH, in ichthyology, a species of *Gasterosteus*, of an oblong shape. It derives its name from the circumstance of its often accompanying ships.

PI'LUM, a missile weapon used by the Roman soldiers, and in a charge darted upon the enemy. Its point was so long and small, that after the first discharge it was generally so bent as to be rendered useless.

PIM'ELITE, in mineralogy, an earthy substance of an apple-green colour, unctuous, soft, and not fusible by the blow-pipe. It is a variety of steatite, and is supposed to be coloured by nickel.

PIMEN'TA, or PIMENTO, Jamaica pepper, popularly called all-spice. The tree producing this spice is of the genus *Myrtus*, and grows spontaneously in Jamaica in great abundance; its flower consists of five petals, and its fruit is a roundish berry, containing a pulpy matter about the seeds. The fruit is gathered when green, and exposed to the sun for many days on cloths, frequently shaking and turning them till thoroughly dry. Pimenta abounds with a fragrant essential oil, which is separated in great quantity by distillation, and is so heavy that it sinks in water.

PIM'PERNEL, in botany, the name of several plants of different genera. The principal are the Water Pimpernel, of the genus *Veronica;* the Scarlet Pimpernel, of the genus *Anagallis;* and the Yellow Pimpernel, of the genus *Lysimachia*.

PIMPINEL'LA, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*. The species are mostly perennials.

PIN, a small pointed instrument made of brass wire and headed; used chiefly by females for fastening and adjusting their dress. The perfection of pins consists in the stiffness of the wire and its whiteness, in the heads being well turned, and in the fineness of the points. In making this little article there are no less than fourteen distinct operations: 1. *straightening the wire;* 2. *pointing*, which is executed on two iron or steel grindstones, by two workmen, one of whom roughens down, and the other finishes; 3. *cutting into pin lengths;* 4. *twisting of the wire for the pin heads;* 5. *cutting the heads*, 12,000 of which may be performed by a skilful workman in an hour; 6. *annealing the heads*, by putting them into an iron ladle, making them red-hot over an open fire, and then throwing them

into cold water; 7. *shaping and fixing on the heads*, which operations are performed by the same workman, who can complete 1500 an hour; 8. *yellowing or cleaning the pins*, by boiling them for half an hour in wine lees, sour beer, or solution of tartar; 9. *whitening or tinning*, which is performed by laying alternate strata of grain, tin, and the pins in a copper pan, and boiling them together for about an hour; 10. *washing the pins*, in pure water; 11. *drying and polishing* them, in a leathern sack filled with coarse bran, which is agitated to and fro by two men; 12. *winnowing*, or separating them from the bran; 13. *pricking the papers* for receiving the pins; and 14. *papering* them, which is done by children, who acquire the habit of putting up 36,000 per day! Well, indeed, may it be said, that the pin manufacture is one of the greatest prodigies of the division of labour. It furnishes 12,000 articles for the sum of three shillings, which have required the united diligence of fourteen skilful operatives. The above is a brief outline of the hand manufacture; but it must not be forgotten that several inventions have been employed to make them, in part at least, by machinery. The consumption for home sale and export amounts to 15,000,000 of pins daily, for this country alone!——The name of *pin* is given to any piece of metal or wood sharpened or pointed in the shape of a pin which serves to fasten; as, the *linch-pin*, which locks the wheel to the axle; also the screw of a musket barrel, &c. In ship building, the larger pins of metal are usually called *bolts*, and the wooden pins, *treenails*. A very small wooden pin is called a *peg*.

PINA'CIA, among the Athenians, were tablets of brass inscribed with the names of all the citizens in each tribe, who were duly qualified and willing to be judges of the court of Areopagus. These tablets were cast into one vessel provided for the purpose, and the same number of beans, a hundred being white and all the rest black, were thrown into another. Then the names of the candidates and the beans were drawn out one by one; and they whose names were drawn out together with the white beans were elected judges or senators.

PIN'CERS, very useful implements of carpenters, smiths, and other artizans, being a double lever, the fulcrum of which is in the joint.

PINCH'BECK, in metallurgy, an alloy, containing three parts of zinc and four of copper.

PINDARE'ES, the name given in British India to the hordes of mounted robbers who, for several years (since 1812), infested the possessions of the East India Company. These freebooters have existed since 1761, but made themselves particularly formidable in the 19th century. They were descended mostly from the caste of Mohammedan warriors, which formerly received high pay from the Indian princes; and these latter, after becoming tributary to the British, secretly excited the Pindarees to attack the Company. In 1817 the marquis of Hastings, then governor-general, determined on their destruction, and being attacked on all sides, they were conquered and dispersed.

PINDAR'IC, an ode in imitation of the odes of Pindar, the prince of Greek lyric poets. [See ODE.]

PINE *(pinus)*, in botany, a genus of trees, of many species, some of which furnish timber of the most valuable kind. The magnificent cedar of Lebanon is one species, remarkable for its size and durability. The Canadian or yellow pine *(pinus resinosa)*, sometimes, though improperly, called the wild pine of Norway, supplies excellent deals for buildings, and often grows straight to the height of eighty feet. The wood is compact and fine-grained, rendered heavy by resinous matter, and is highly esteemed for its strength and durability. When young it is a beautiful tree, and the vegetation is always vigorous. The white pine *(pinus strobus)* is the loftiest tree in the United States of America, and its timber, though not without essential defects, is consumed in much greater quantities, and for a far greater variety of purposes, than any other. It attains the height of 150 feet, or more, with a trunk five feet in diameter. The *pinus lambertiana* is a species of gigantic size: the trunk rises from 150 to upwards of 200 feet in height, and is from seven to nearly twenty feet in diameter. The timber is white, soft, and light, and produces an abundance of a pure amber-coloured resin, which, when the trees are partly burned, acquires a sweet taste, and in this state is used by the natives as a substitute for sugar. The seeds are eaten either roasted, or pounded into coarse cakes for use during the winter season.——We cannot specify all the varieties, from their number; the wild pine, or Scots fir of Europe, must not, however, be omitted. The trunk attains the height of eighty feet, by four or five in diameter, and the timber is applied to a great variety of uses, and especially is excellent for masts. These, together with the timber in other forms, are exported from Riga, Memel, Dantzic, and other parts of the north to the other maritime states of Europe, and particularly to Great Britain. Large vessels have been constructed of this pine; and though they are less durable than those built of oak, they come next to it. In those districts where it abounds, houses as well as furniture are generally constructed of it, and its lightness and stiffness render it superior to any other materials for beams, girders, joists, rafters, &c. It also furnishes excellent charcoal for forges; but a more important product is the resinous matter, consisting of tar, pitch, and turpentine, of which articles it supplies four-fifths of the consumption in the European dock-yards.

PIN'EAL GLAND, in anatomy, a small heart-shaped substance, about the size of a pea, situated at the basis of the brain. It was anciently supposed to be the seat of the soul.

PI'NE-APPLE, in botany, the *Ananas*,

THERE IS SCARCELY ANY KIND OF MACHINERY MORE INGENIOUS THAN THAT FOR MAKING THE INCONSIDERABLE ARTICLE—A PIN.

THE HEADS ARE MADE OF IRON WIRE, RENDERED BLACK BY A VARNISH OF LINSEED OIL WITH LAMP-BLACK.

a species of *Bromelia*. It is an herbaceous plant, with leaves something similar to those of the aloe. The fruit resembles in shape the cone of the pine-tree, whence it has derived its name.——The place where pine-apples are raised is called a *pinery*.

PIN'ION, in mechanics, a spindle, in the body of which are several notches, which catch the teeth of a wheel that serves to turn it round: or it is the lesser wheel which plays in the teeth of a larger.——The joint of a bird's wing remotest from the body.——The nut or lesser wheel of a watch.

PIN'ITE, a mineral found in prismatic crystals of a greenish white-colour, brown, or deep red: it holds a middle place between steatite and mica.

PINK, in botany, a plant and flower of the genus *Dianthus*, common in our gardens, and of which more than 100 species are known. Their roots are annual and perennial; the stems herbaceous and jointed; the leaves opposite and entire; and the flowers terminal, aggregate, or solitary, but always elegant, and much esteemed for their rich spicy odour.——Also a colour used by painters: a faint shade of crimson.

PIN'NA, in ichthyology, a shell-fish which produces pearls of different colours; as gray or lead-coloured, red, and some of a blackish colour, and in the form of a pear. ——*Pinna*, in botany, though it signifies literally a wing, is applied to plants to denote the leaflet of some compound leaves.

PIN'NACE, a small vessel navigated with oars and sails, and having generally two masts, which are rigged like those of a schooner; also one of the boats belonging to a man of war, usually with eight oars, and used to carry the officers to and from shore.

PIN'NACLE, in architecture, the top or roof of a building, terminating in a point. Among the ancients the pinnacle was appropriated to temples; their ordinary roofs being all flat. It was from the pinnacle that the *pediment* took its rise.

PIN'NATE, or PIN'NATED (*pinnata folia*), in botany, leaves formed in the manner of a wing, being composed of two large ranges or series of *foliola*, annexed to the two sides of one oblong petal. There are, however, several kinds; but by a *pinnate* leaf we generally understand a species of compound leaf wherein a simple petiole has several leaflets attached to each side of it.

PIN'NATIFID, in botany, an epithet for a kind of simple leaf, divided transversely by oblong horizontal segments or jags, not extending to the middle rib.

PIN'NATIPED, in ornithology, an epithet for birds whose toes are bordered by membranes.

PIN'NITE, fossil remains of the Pinna, a genus of shells.

PIN'NULATE, in botany, an epithet for a leaf in which each pinna is subdivided.

PI'NUS, in botany, the Pine-tree. Also the name of a genus of plants in the Linnæan system, class 21 *Monoecia*, order 8 *Monadelphia*.

PIONEE'R, in military tactics, a military labourer, or one whose business is to attend an army in its march, to clear the way, by cutting down trees and levelling roads; as also to work at intrenchments, or form mines for destroying an enemy's works.

PIP, a disease in young birds, particularly in that of domestic birds, which consists of a white skin or film near the tip of the tongue, and which, if not removed, proves fatal, as it hinders their feeding.

PIPE, a long tube or hollow body; applied to the veins and arteries of the body, and also to such other tubular bodies as are used for conductors of water or other fluids. The pipes by which water is conveyed beneath the ground are generally of a moderate size, and may be made from a great variety of materials, the main objects being that they should possess strength, tightness, and durability, and that the materials of which they are composed should not be capable of contaminating the water. *Iron pipes* are considered preferable to those of wood, being stronger, and in most situations more durable. They are made of cast iron, with a socket, or enlarged cavity at one end, into which the end of the next pipe is received. The joints thus formed are rendered tight, either by filling the interstices with lead, or by driving in a small quantity of hemp, and filling the remainder of the socket with iron cement, made of sulphur, muriate of ammonia, and chippings of iron. *Copper pipes* are extremely durable, and are made of sheet copper, with the edge turned up and soldered; but they require to be tinned inside on account of the poisonous character of the material. *Lead pipes* are much employed for small aqueducts, owing to the facility with which they can be soldered and bent in any direction; and they are supposed not to contaminate water, but they are not safe for pipes intended to convey acid liquors. *Stone pipes* preserve the water contained in them in a very pure state, but are generally very expensive on account of the labour of working them. *Earthen pipes* made of common pottery ware, and glazed on the inside, are also used, but they are more liable to be broken than most other kinds, and cannot therefore be relied on.——*Pipe*, in music, a wind instrument, smaller than a flute. The word is not now the proper technical name of any particular instrument, but is applicable to any tubular wind instrument.——*Pipe*, a wine measure, usually containing 105 imperial, or 126 wine gallons. But, in commerce, the size of the pipe varies according to the description of wine it contains. Thus, a pipe of port contains about 128 wine gallons; sherry, 130; Lisbon and Bucellas, 140; Madeira, 110; and Vidonia, 120. ——*Pan-pipes* are a range of short pipes bound together side by side.——*Pipe*, in mining, is where the ore runs forward endwise in a hole, and does not sink downward or in a vein.——*Pipe-office*, in law, an office in which a person, called the clerk of the

pipe, makes out leases of crown lands by warrant from the lord treasurer, the commissioners of the treasury, or the chancellor of the exchequer. He also makes out all accounts of the sheriffs, &c.

PI'PE-CLAY, a white argillaceous earth, found in great quantities at the isle of Purbeck in Dorsetshire, and at Teignmouth in Devonshire, in lumps, which are purified by dissolving in water. The clay, when prepared, is spread on a board and beaten with an iron bar to temper and mix it; it is then divided into pieces of a proper size to form a tobacco-pipe, which being formed in moulds and baked in a moderately heated furnace, become the clay pipe used in smoking.——In Germany there are a great variety of *smoking pipes*, of all shapes and sizes, with bowls of wood, meerschaum, porcelain, &c. A German pipe generally consists of four chief parts; the mouth-piece, the tube, the bowl, and a part which connects the two latter, and serves to collect the juice descending from the tobacco, and prevent it from getting into the tube. ——The Eastern *hookah* is a very curious instrument, the essential feature of which is, that the smoke passes through water, loses the particles which give it an unpleasant flavour, and becomes cool before it reaches the mouth.

PI'PE-FISH, in ichthyology, the *Syngnathus* of Linnæus; a fish so called from the length and slenderness of its body, which in its thickest part is only equal to a swan's quill.

PI'PER, in botany, the name of a genus of plants in the Linnæan system; class 2 *Diandria*, order 3 *Trigynia*. The species are perennials, and consist of the different kinds of pepper.

PIP'ERINE, a concretion of volcanic ashes. Also a peculiar crystaline substance extracted from black pepper. It has an extremely bitter and acrid taste, and is very slightly volatile.

PIPISTREL, in zoology, a species of bat, the smallest of the kind.

PIP'PIN, the name given to several kinds of apples; as the golden pippin, the lemon pippin, the Kentish pippin, &c. *Pippins* take their name from the small spots or pips that usually appear on the sides of them.

PIQUET', a game at cards played between two persons, with only thirty-two cards; all the deuces, threes, fours, fives, and sixes being set aside.

PI'RACY, the crime of robbery or taking of property from others by open violence on the high seas, without authority. It includes all acts of robbery and depredation committed at sea, which, if occurring upon land, would amount to felony. The word *pirate* signifies literally an adventurer. Formerly the offence of piracy was only cognizable by the admiralty courts; but it being inconsistent with the liberties of the nation that any man's life should be taken away, unless by the judgment of his peers, an act was passed in the reign of Henry VIII. establishing a new jurisdiction for this purpose, which proceeds according to the course of common law. During the anarchy of the middle ages, when every baron considered himself a sort of independent prince, entitled to make war on others, piracy was universally practised; nor was the nuisance finally abated in Europe till the feudal system had been subverted, and the ascendancy of the law everywhere secured. In more modern times, some of the smaller West India islands have been the great resort of pirates: latterly, however, they have been mostly driven from their haunts in that quarter.

PIROUETTE', in dancing, a rapid circumvolution upon one foot, which on the stage is repeated by the dancers many times in succession.——In riding, it is the sudden short turn of a horse, so as to bring his head suddenly in the opposite direction to where it was before.

PIS'CARY, in our ancient statutes, the right or liberty of fishing in another man's waters.——We have several other words derived from the Latin *piscis*, a fish; as *piscatory* and *piscine*, for whatever relates to fishes or to fishing; *piscivorous*, feeding or subsisting on fishes; *piscation*, the act or practice of fishing.

PIS'CES, in natural history, is the fourth class in the Linnæan system. [See Ichthyology.] This branch of natural history is much more imperfectly understood than the others, owing to the circumstance of the animals of which it treats inhabiting the watery element, with which we must necessarily be in a great measure unacquainted. The general form and structure of fishes is beautifully adapted to the peculiarity of their situation. Being nearly of the same specific gravity as the water which they inhabit, their small fins only are requisite to enable them to move with ease and steer their course at pleasure. The pectoral, and more particularly the ventral fins, serve to raise and depress the fish: when the fish desires to have a retrograde motion, a stroke forward with the pectoral fin effectually produces it: if the fish desire to turn either way, a single blow with the tail, the opposite way, sends it round at once; if the tail strike both ways in succession, the motion produced by the double lash is progressive, and enables the fish to dart forward with astonishing velocity. Fishes have the organs of sense, some of them probably in a very high degree, and others imperfectly: of the latter kind are the senses of touch and taste: the sense of hearing, the existence of which was formerly doubted, is now completely ascertained, and is found to be situated in the head. The organ of smelling is large, and the animals have a power of contracting and dilating the entry to it as they have occasion. By their acute smell they are supposed to discover their food. The sight of fishes is the most perfect of their senses, and is perhaps the only one that, from the peculiarity of their situation, they necessarily have occasion for. Fishes are mostly carnivorous, though they will seize

THE GREAT AFFINITY FOR GREASY SUBSTANCES. ... AFFINITY FOR GREASY SUBSTANCES.

THE TURKS MAKE USE OF PIPES THREE OR FOUR FEET LONG, MADE OF RUSHES OR WOOD AND AN EARTHEN BOWL.

upon almost anything that comes in their way, and not unfrequently devour their own offspring: they seem to manifest a predilection for whatever they can swallow possessed of life. Notwithstanding their natural voracity, fishes can live long apparently without food; and to account for this it has been supposed they feast on insects too small for the human eye to see, or that they have the power of chemically decomposing water.——*Pisces*, in astronomy, the twelfth sign or constellation in the zodiac. This sign is represented by two fishes tied together by the tails. They are fabled by the Greeks to have been the fishes into which Venus and Cupid were changed, in order to escape the giant Typhon; but according to the Egyptian mythology, the *Pisces* were hieroglyphic of the spring season when the fishing commences.

PIS'CIS VO'LANS, in astronomy, a small constellation of the southern hemisphere unknown to the ancients, and invisible to us in these northern regions.

PIS'OLITE, in mineralogy, a carbonate of lime, slightly coloured by the oxyde of iron. It is sometimes called *calcareous tufa*; and occurs in little globular concretions of the size of a pea or larger, which usually contain each a grain of sand as a nucleus.

PIS'OPHALT, or PEA-MINERAL; a soft bitumen, black and of a strong pungent smell. It holds a middle place between petroleum, which is liquid, and asphalt, which is dry and brittle.

PISSASPHAL'TUM, *Earth-pitch*, a fluid opaque mineral substance, of a thick consistence, a strong smell, readily inflammable, but leaving a residuum of greyish ashes after burning.

PISSELÆ'UM IN'DICUM, Barbadoes Tar, a mineral fluid of the nature of the thicker bitumens, and approaching nearer than any other, in appearance, colour and consistence to the true pissasphaltum, though differing from it in other respects. It is very frequent in many parts of America, where it is found trickling down the sides of mountains in large quantities, and sometimes floating on the surface of the waters.

PISTA'CHIA, or PISTA'CHIO NUT, in botany, the nut of the *Pistachia terebinthus*, or turpentine-tree, containing a kernel of a pale greenish colour, flavoured like an almond, and yielding a pleasant oil. It is wholesome and nutritive. The tree grows in Syria, Arabia, and Persia.

PISTAREEN', a silver coin of the value of ninepence.

PIS'TIL, in botany, the pointal, an organ of female flowers for the reception of the pollen, supposed to be a continuation of the pith, and when perfect, consisting of the germ or ovary, the style, and the stigma. ——*Pistillaceous*, growing on the germ or seed-bud of a flower.——*Pistilliferous*, having a pistil without stamens; as, a female flower.

PIS'TOL, the smallest kind of fire-arms, and consequently the most portable. Pistols are of various lengths, and borne by horsemen in cases at the saddle bow; the management of them forms a part of the manual exercise of the cavalry.

PIS'TOLE, a Spanish gold coin, but current also in the neighbouring countries. It is worth from 17*s*. to 19*s*.

PIS'TON, a short cylinder of metal or other solid substance, fitted exactly to the cavity of the barrel of the pump, or other machine to which it is applied. There are two kinds of pistons used in pumps, the one with a valve, and the other without a valve, called a forcer.

PITCH, a thick, tenacious, oily substance, the residuum of inspissated tar, obtained by incision from pines and firs, and used to preserve wood from the effects of water and for other purposes. It abounds in hydrogen, and is, therefore, very combustible. The smoke of pitch condensed forms lamp-black.——*Pitch*, in architecture, the angle which the roof of a building is set to. Also the point where a declivity begins, or the declivity itself; as, the *pitch* of a hill.——*Pitch*, in music, the degree of elevation of the key-note of a tune. The instrument used for this is called a *pitch pipe*.——We read in Roman history, that *pitched shirts* were made use of by the Romans to punish incendiaries. The criminals were wrapped up in a garment daubed over with pitch and other combustibles, and then set on fire.

PITCH'ING, in sea language, the movement by which a ship plunges her head and afterpart alternately into the hollow of the sea. This motion may proceed from two causes; the waves which agitate the vessel; and the wind upon the sails, which makes her bend to every blast.

PITCH'STONE, in mineralogy, a subspecies of quartz, which in lustre and texture resembles pitch. It occurs in large beds, and sometimes forms whole mountains. Its colours are green and black; or brown, tinged with red, green, or yellow. It is also called *obsidian* and *resinite*.

PITH, the soft spungy substance in the centre of plants and trees. In animals, the spinal marrow.——The word *pith* is also used to express concentrated force, or closeness and vigour of thought and style. We say, the summary contains the *pith* of the original; in that speech the *pith* of the whole argument is condensed, &c.

PITU'ITARY GLAND, in anatomy, a small oval body on the lower side of the brain, supposed by the ancients to secrete the mucus of the nostrils.——*Pituitary membrane*, the mucous membrane that lines the nostrils and sinuses communicating with the nose.——*Pituitous*, consisting of or resembling mucus.

PITYRIA'SIS, in medicine, a scurfy disorder of the head and adjacent parts.

PIU', in music, Italian for *a little more*. It is prefixed to words to increase their force, as *piu allegro*, a little brisker; *piu piano*, a little softer, &c.

PIV'OT, in mechanics, a pin on which any thing turns. In the military art, the officer,

serjeant, corporal, or private, upon whom the different wheelings are made in military evolutions.

PLACA'RD, a printed or written paper posted in a public place, intended either to notify some public measure, or to censure public or private characters. It was originally the name of an edict, proclamation, or manifesto issued by authority; but in that sense the word is not now used.

PLACE, in physiology, that part of immovable space which a body occupies. It is either *absolute* or *relative*, the latter signifying that part of space which has relation to other objects. "Place is to space or expansion," says Mr. Locke, "as time is to duration. Our idea of place is nothing but the relative position of anything with reference to its distance from some fixed and certain points. Whence we say, that a thing has or has not changed place, when its distance either is or is not altered with respect to those bodies with which we have occasion to compare it."——In astronomy, the word *place* has various significations: the *physical place* is that in which the centre of a celestial body lies; the *optical place* is that point on the surface of the sphere where the spectator sees the centre of the star, &c. The *eccentric place* of a planet is that point of its orbit in which a planet would appear if seen from the sun. The *geocentric place*, that point of the ecliptic to which a planet, viewed from the earth, is referred.——*Place*, in geometry, any point in a certain bound or extent wherein a figure may serve for the solution of a problem.

PLACENTA, in botany, the part of a plant or fruit to which the seeds are attached. The disposition of the cotyledons, or lobes in the vegetation or germination of seeds, is termed *placentation*.

PLAGUE, a malignant and contagious disease that often prevails in Egypt, Syria, and Turkey. It generally proves fatal to nations and great cities, but is arrested by cleanliness, or the avoiding of putrid fermentations, of which it seems to be an extension. Dr. Madden, who paid great attention to the nature, causes, and effects of the plague, observes, in his Travels in Turkey, Egypt, &c., "I am thoroughly persuaded that the plague is both contagious and infectious; at one period epidemical, at another endemical; in plain English, that the miasma may be communicated by the touch or by the breath; that in one period it is confined to a particular district, and at another is disseminated among the people: but if plague have one form more decided than another, it is the endemic." He adds, "I have given the plague the name of *typhus gravissimus*. The symptoms, from the first, are general debility, congestion about the heart, not depending on inflammation, but on the putrescent state of the circulation. It differs little from putrid typhus, except in its duration and eruptions. In every stage of plague nature appears to lie prostrate under the influence of the poisonous miasma; and when the patient sinks at last, it is from the want of force in the constitution to drive out the eruptions on the surface."

PLAICE, in ichthyology, a fish of the genus *Pleuronectes*, flat and somewhat square in its form, and furnishing an article of wholesome food.

PLAIN'TIFF, in law, the person who commences a suit before a judicial tribunal, for the recovery of a claim; opposed to *defendant*.

PLAN, the representation of something drawn on a *plane*; as a map, chart, or ichnography. It is, however, more particularly used for a draught of a building, as it appears, or is intended to appear on the ground; showing the extent, division, and distribution of its area, or ground plot, into apartments, rooms, passages, &c.——A *geometrical plan* is one in which the solid and vacant parts are represented in their natural proportions. The *raised plan* of a building is otherwise called an *elevation* or *orthography*. A *perspective plan* is that which is exhibited according to the rules of perspective. [See PERSPECTIVE.]—— The word *plan* also signifies a scheme or project; the form of something to be done existing in the mind, with the several parts adjusted in idea. A *plan*, in this sense, may be expressed in words or committed to writing; as a *plan* of a constitution of government, the *plan* of a military expedition, &c.

PLANE, in geometry, a plain surface, or one that lies evenly between its boundary lines; and as a right line is the shortest extension from one point to another, so a plane surface is the shortest extension from one line to another.——In astronomy, the term *plane* is used for an imaginary surface, supposed to pass through any of the curves described on the celestial sphere; as, the *plane* of the ecliptic; the *plane* of a planet's orbit, &c.——In joinery, &c. a *plane* is an instrument consisting of a smooth piece of wood, with an aperture, through which passes obliquely a sharp-edged tool, used in paring and smoothing wood; these are of various forms and sizes, adapted to the nature of the work.

PLAN'ET, a celestial body revolving round the sun as a centre, and continually changing its position with respect to the fixed stars; whence the name *planet*, which in the Greek signifies "wanderer." The planets are distinguished into primary and secondary. The *primary* planets are those which revolve round the sun as a centre; and the *secondary*, more usually called satellites or moons, those which revolve about a primary planet as a centre, and constantly attend it round the sun. The primary planets are Mercury, Venus, the Earth, Mars, Jupiter, Saturn, and Herschel or the Georgium Sidus. Four smaller planets, sometimes called *asteroids*, namely, Ceres, Pallas, Juno, and Vesta, have recently been discovered between the orbits of Mars and Jupiter. Saturn, Jupiter, Mars, and Herschel, being without the earth's orbit, are sometimes called the *superior* planets; Venus and Mercury, being within the earth's

orbit, are called *inferior* planets. The planets are opaque bodies, which receive their light from the sun; and they are distinguished from the *fixed* stars, not only by their motion or revolution, but by their not twinkling. The elements of a planet are, 1. its mean distance; 2. its sidereal period; 3. eccentricity; 4. its inclination; 5. place of node; 6. longitude; and 7. its own longitude at a fixed time.——*Motion of the planets.* The primary planets all bend their course about the centre of the sun, and are accelerated in their motions as they approach to him, and retarded as they recede from him; so that a ray, drawn from any one of them to the sun, always describes equal spaces or areas in equal times: whence it follows, that the power which bends their way into a curve line, must be directed to the sun. This power is no other than that of gravitation, which increases according as the square of the planet's distance from the sun decreases. The universality of this law still farther appears by comparing the motions of the different planets: for the power which acts on a planet near the sun is manifestly greater than that which acts on a planet more remote; both because it moves with greater velocity, and because it moves in a less orbit, which has more curvature, and separates farther from its tangent, in arcs of the same length, than in a greater orbit. To convey some idea of the space occupied by the planetary system, if, indeed, the idea of space so vast be capable of comprehension sufficiently clear to have its due effect on the mind, it may be observed that the sun, which occupies so small a portion of that space, is a million times larger than the earth. Huygens, one of the most expert astronomers of the last century, calculated the time in which a cannon-ball would run over the space between the earth and the sun, and between the sun and the upper planets, and thence to the fixed stars; and offers experiments to prove that it runs the first hundred fathoms in a second. Continuing to move with the same velocity, it will traverse three leagues in a minute, one hundred and eighty in an hour, and four thousand three hundred and twenty in a day; and therefore, judging upon astronomical principles of the several distances required, and dividing them by the space so over run in a given time, this philosopher concludes that the ball must take up twenty-five years in passing from the sun to the earth; one hundred and twenty-five in passing from the sun to Jupiter; and two hundred and fifty in reaching Saturn. But, how astonishing soever these distances may be, they are trivial compared with that of the fixed stars. Those bodies, which appear only as points in the firmament, and of which millions escape our sight, are considered the centres of systems—suns, round which planets revolve. What then must be their distance, since all this multitude of suns shed so small a portion of light on the planet to which we belong?

PLANETA'RIUM, an astronomical machine, made to represent the motions of the heavens. [See ORRERY.]

PLANE-TREE, in botany, a tree of the genus *Platanus*. The oriental plane-tree, a native of Asia, rises with a straight, smooth, branching stem, to a great height, with palmated leaves and long pendulous peduncles, sustaining several heads of small flowers. The seeds are downy, and collected into round, rough, hard balls. There is also a downy pubescence which coats the young leaves and branches of plane-trees. This down is formed of delicate branched spiculæ, which, like the elementary organs composing the epidermis and other parts of many plants, consist mainly of silica, and may, consequently, be likened to extremely minute glass needles. In the spring of the year, more especially, this down readily falls off, and being wafted about by the air, is rendered noxious to gardeners who may chance to be working in the neighbourhood of these trees; for entering at the mouth and nostrils, these spiculæ insinuate themselves into the more delicate parts about the base of the respiratory organs, and produce considerable irritation and inflammation. ——The occidental plane tree, which grows to a great height, is a native of North America; where it is also called *button-wood*.

PLANIFO'LIOUS, in botany, an epithet for a flower made up of plain leaves or petals, set together in circular rows round the centre. The word *planipetalous* is also used for the same.

PLANIM'ETRY, the mensuration of plain surfaces, or that part of geometry which regards lines and plain figures, without considering their height or depth.

PLAN'ISPHERE, a sphere and its various circles projected on a plane, such as maps, &c.; but more particularly, a projection of the celestial sphere upon a plane, representing the stars, constellations, &c.

PLA'NO, a prefix to several words; as *plano-conical*, plain or flat on one side and conical on the other; *plano convex*, flat on one side and convex on the other; *plano-horizontal*, having a level horizontal surface or position; *plano-subulate*, smooth and awl-shaped.

PLANT, in physiology, a general name for every kind of vegetable, though in popular language the word is generally applied to the smaller species of vegetables. A plant is an organic body, destitute of sense and the power of locomotion, adhering to another body in such a manner as to draw from it its nourishment, and capable of reproducing its kind, "whose seed is in itself." *Gen.* i.——The root, or part whereby plants are connected to their matrix, and by which they receive their nutritious juice, consists of an infinite number of absorbent vessels, which being dispersed through the interstices of the earth, attract or imbibe its juices; consequently, every thing in the earth that is dissoluble in water, is liable to be imbibed. The motion of these nutritious juices is not unlike that of the blood in animals, being effected by the action of

the air. Though formerly unknown, it is now clearly ascertained that plants consist of two series or orders of vessels: 1. such as receive and distribute the alimentary juices, answering to the arteries, lacteals, veins, &c. of animals; and 2. the tracheæ, or air-vessels, which are long hollow pipes, wherein air is received and expelled. It accordingly follows, that the heat of the sun must have a strong effect on the air included in these tracheæ; whence arises a perpetual spring of action to promote the circulation of the juices in plants. [For the botanical distribution of plants into classes, genera, &c., see BOTANY.]——*Plants used in food and medicine:* Notwithstanding accident first directed attention to the cultivation of culinary vegetables, very few of these are now found in a natural state, and they are then so modified as to escape the notice of any except expert botanists. And it may almost be taken as a general rule, that in proportion as cultivation improves the nutrition of the plant for food, so does it deteriorate in its medicinal qualities. It is also remarkable that a very large proportion of plants employed as food are not now known in a wild state, particularly the different varieties of corn which have followed man in his emigrations, and are only met with under the hands of the cultivator.——*Spontaneous Plants:*—Few things are more extraordinary than the unusual appearance and development of certain plants in certain circumstances. Thus, after the great fire of London in 1666, the entire surface of the destroyed city was covered with so vast a profusion of a species of a cruciferous plant, the *Sisymbrium irio* of Linnæus, that it was calculated that the whole of the rest of Europe did not contain so many plants of it. It is also known that if a spring of salt water makes its appearance in a spot, even a great distance from the sea, the neighbourhood is soon covered with plants peculiar to a maritime locality, which plants, previous to this occurrence, were entire strangers to the country. Again, when a lake happens to dry up, the surface is immediately usurped by a vegetation which is entirely peculiar, and quite different from that which flourished on its former banks.——*Skeletons of the Leaves, Calyxes, &c. of Plants, may be produced by the following method:*—Procure an open-topped earthen pan, holding a gallon or more, and put into it a quantity of leaves, seed-vessels, &c.; and pour upon them a sufficiency of *boiling* soft water to cover them. This done, place the pan upon the tiles of the roof of the house, or in any other place exposed to the warmth of a summer's sun and the vicissitudes of the weather. Stir the leaves occasionally (say, once or twice a week) and carefully, but never change the water. The putrefactive fermentation will now soon ensue; and, in about six weeks or two months, according to the nature of the subjects, many of the specimens will be completely macerated; and will require no other attention than holding them singly under the tap of the water-tub, or some other small forcing stream of water, which will wash away all the other skin and green fleshy matter. If this matter does not come off readily when assisted a little with the thumb and finger, or a small knife, the leaves must be soaked for a longer time. Those of the leaves which seem liable to break during the washing of them may be preserved from breaking by placing them upon a little piece of board, and holding them by the thumb and finger; and, should a little of the green fleshy matter remain fixed between the interstices of the skeleton leaf, it may easily be removed by striking the leaf *perpendicularly* with a clothes brush. They will now only require bleaching; this may be done very effectually, by placing them in a bandbox, with a little sulphur burning in a small vessel beside or under them. The most sure way, however, of bleaching objects of this nature is, to immerse them, for a few minutes, in dilute chloride of lime, or chloride of soda.

PLAN'TÆ, in botany, the name of the last of the seven families into which Linnæus has distributed the whole vegetable kingdom; comprehending all those which are not funguses, algæ, mosses, ferns, grasses, or palms, and is divided into *herbaceous plants, shrubs*, and *trees*.

PLANTA'GO, in botany, a genus of plants in the Linnæan system; class 4 *Tetrandria*, order 1 *Monogynia*.

PLANTAIN-TREE, in botany, a tree of the genus *musa*, the most remarkable species of which are, the *paradisiaca* or plantain, and the *sapientum* or banana-tree. The plantain rises with a soft stem fifteen or twenty feet high, and the fruit is a substitute for bread. It is one of the most useful plants in the vegetable creation, and as some of the trees are in bearing most of the year, they form the entire sustenance of many of the inhabitants of the tropical climates.

PLANTA'TION, in the West Indies, and also in the United States of America, an estate or tract of land occupied and tilled, either for the culture of the sugar cane, or for tobacco, rice, indigo, and cotton, as the case may be.——In politics, a colony or settlement of people in a foreign country.——In horticulture, any place which is planted with shrubs and trees.

PLANT-CANE, in the West Indies, sugar canes of the first growth, in distinction from the ratoons, or sprouts from the roots of canes which have been cut.

PLANT'ER, a proprietor and cultivator of ground in the West Indies and southern states of America.

PLASH, the branch of a tree partly cut or lopped and bound to other branches.——*Plashing*, bending the boughs of hedges and interweaving them, so as to thicken them.

PLAS'TER, in medicine, an external application to the body, spread on linen or leather.——*Plaster*, in masonry, a composition of lime, water, and sand, well mixed into a kind of paste and used for coating walls and partitions of houses, which when dry becomes hard, but still retains the name of plaster.——*Plaster of Paris*, a prepara-

PLATED GOODS SHOULD BE KEPT DRY, THE COATING OF SILVER ON THEM BEING SO THIN AS TO BECOME SOON CANKERED BY DAMP.

PLATE-POWDER CONTAINING QUICKSILVER SOON TARNISHES, AND RENDERS THE PLATE SO BRITTLE AS TO BREAK WHEN LET FALL.

tion of several species of gypsum dug near Montmartre, a village in the neighbourhood of Paris, from which city it takes its name. The use of this substance, in imitating works of sculpture, is well known.——In popular language, this name is applied improperly to plaster-stone or to any species of gypsum.

PLAS'TIC ART, a branch of sculpture, being the art of forming figures of men and animals in plaster, clay, &c.——The word *plastic* signifies having power to give form or fashion to a mass of matter; as, the *plastic* hand of the Creator, &c.

PLATE, vessels or utensils of gold or silver; from the Spanish word *plata*, signifying "silver;" but which application of the word seems itself to be derived from the practice of forming silver into flat or shallow articles for the table; though any silver vessel or wrought ornament in silver is denominated *plate*.——*Plate armour*, that kind which is composed of broad pieces, and thus distinguished from *mail* armour.

PLAT'FORM, in architecture, a row of beams which support the timber-work of a roof; also any erection consisting of boards raised above the ground for an exhibition or any other temporary purpose.——*Platform*, in the military art, an elevation of earth on which cannon are mounted to fire on an enemy.——*Platform*, in a ship of war, a place on the lower deck; the orlop.——*Plats of a ship*, flat ropes made of rope yarn, and weaved one over the other; they serve to save the cable from galling in the hawse, or to wind about the flukes of the anchors to save the pennant of the fore-sheet from rubbing them.

PLATIC AS'PECT, in astrology, a ray cast from one planet to another, not exactly, but within the orb of its own light.

PLA'TING, the art or operation of covering baser metals with a thin plate of silver; constituting what is termed *plated goods*, or the *plated manufacture*. It is said to have been invented by a spur-maker, not for show, but a purpose of real utility. The more elegant spurs were used to be made of solid silver, and from the flexibility of that metal they were liable to be bent by the slightest accident. To remedy this defect, the workman alluded to, who resided at Birmingham, contrived to make a pair of spurs hollow, and to fill the space with a slender rod of steel or iron. Finding this a great improvement, and being desirous to add cheapness to utility, he contrived to make the hollow larger, and of course the iron thicker, till at length he discovered the means of coating an iron spur with silver, in such a manner as to make it equally elegant with those which were made wholly of that metal. The invention was quickly applied to other purposes; and numberless vessels have now the strength and cheapness of copper or iron, with the appearance of silver.——The old method of *plating* was by dissolving mercury in nitrous acid, dipping the copper, and depending on the affinity of the metals, by which a very slight article was produced. But at Sheffield and Birmingham, all plate is now produced by rolling ingots of copper and silver together. About the eighth of an inch in thickness of silver is united by heat to an inch of copper in ingots about the size of a brick. It is then flattened by steel rollers worked by an eighty-horse power engine. The greater malleability of the silver occasions it to spread equally with the copper into a sheet of any required thickness, according to the nature of the article for which it is wanted. Plated metal, the eighth of an inch thick, is thus rolled by the hand into ten times the surface, the silver spreading equally; and the plating would be perfect if the rolling had reduced it to the thinness of silver paper! This mode of plating secures to modern plate a durability not possessed by any plate silvered by immersion. Hence plated goods are now in universal request, and, if fairly used, are nearly as durable as silver itself; particularly since the introduction of silver edges instead of plated ones, which must be considered the greatest improvement that has taken place in this branch of manufacture.

PLATI'NUM, or PLATI'NA, a metal found in the mines of Peru, and unknown in England before the year 1741. In beauty, scarcity, ductility, and indestructibility, it is considered as not inferior to gold and silver, and in other qualities far their superior. When pure, it is of a grayish-white colour, like silver, or more like polished steel. It is harder than iron, undergoes no alteration from the action of air, and resists the action of acids and alkalies. Its ore contains palladium, iridium, osmium, and rhodium, besides iron and chromium. It is melted with difficulty, but drawn into very fine wire.

PLATON'IC, pertaining to Plato, his school, philosophy, opinions, &c. Thus *Platonic love* denotes a pure spiritual affection, for which Plato was a great advocate, subsisting between the different sexes, unmixed with carnal affections, and regarding no other object but the mind and its excellencies. It is also sometimes understood as a sincere disinterested friendship subsisting between persons of the same sex, abstracted from any selfish views, and regarding no other object than the individual so esteemed.——*Platonic year*, or the *great year*, a period of time determined by the revolution of the equinoxes, or the space of time in which the stars and constellations return to their former places in respect to the equinoxes. This revolution, which is calculated by the precession of the equinoxes, is accomplished in about 25,000 years. [See PHILOSOPHY.]

PLA'TONIST, one that adheres to the philosophy of Plato.

PLATOON', in the military art, a small square body of forty or fifty musketeers, drawn out of a battalion of foot, and placed between the squadrons of horse to sustain them; or a small body acting together, but separate from the main body; as, to fire by *platoons*.

PLAT'YPUS, in zoology, a quadruped in

New Holland, whose jaws are elongated into the shape of a duck's bill. The body is covered with thick hair, and the feet are webbed.

PLATYSMA, in anatomy, a thin muscle on the side of the neck that assists in drawing the skin of the cheek downwards.

PLAY. [See DRAMA.]

PLEA, in law, that which is alleged by a party for himself in court, in a cause there depending; but in a more limited sense, the defendant's answer to the plaintiff's declaration and demand. That which the plaintiff alleges in his declaration is answered and repelled, or justified by the defendant's *plea*. Pleas are usually divided into those of the crown and common pleas. Pleas of the crown are all suits in the king's [queen's] name, or in the name of the attorney-general on his [her] behalf. Common pleas are such suits as are carried on between subjects in civil cases.

PLE'ADING, in law, a speech delivered at the bar in defence of a cause: but, in a stricter sense, *pleadings* are all the allegations of the parties to a suit, made after the declaration, till the issue is joined. In this sense they express whatever is contained in the bar, replication, rejoinder, &c. till the question is brought to issue, that is, to rest on a single point.——*Pleading*, amongst the Greeks and Romans, was limited as to its duration, by a *clepsydra* or hour-glass of water; and to see that the orators had justice done them, in this respect, an officer was appointed to distribute the proper quantity of water to each.

PLEASURE, the gratification of the senses or of the mind; agreeable excitements in a state of health, contentment, and self-satisfaction, not of those kinds which produce exhaustion and disease, but of which the stock is inexhaustible, as those of the mind, of friendship, benevolence, doing good to others. Pleasure and pain seem to be the means made use of by nature to direct us in the pursuit of happiness; since pleasure is annexed to whatever contributes thereto, and pain is the companion of what tends to our ruin. Hence it is, that the pleasures of a child, a youth, a grown person, and an old man all vary, according to the different things required by nature in each state, whether simply for the preservation of the individual, or for that and propagation jointly.

PLEBEIAN, one of the common people, or a person in the lower ranks of society. Amongst the Romans, that part of the populace which was distinguished from the senatorian and equestrian order. The plebeians at first were employed in cultivating the lands, and the exercise of trades and mechanical professions; but in time they broke through this illiberal restraint, and claimed a participation with the other orders in places of trust, dignity, and emolument. The power of the plebians, from the first appointment of tribunes, in the year of the city 260, gradually increased, till it became an overmatch for that of the senate.

PLEDGE, something left in pawn; that which is deposited with another as security for the repayment of money borrowed, or for the performance of some agreement or obligation.——In law, bail; surety given for the prosecution of a suit, or for the appearance of a defendant, or for restoring goods taken in distress and replevied.——*To pledge*, in drinking, is to warrant a person that he shall receive no harm while drinking, or from the draught; a practice which originated with our ancestors in their rude state, and which was intended to assure the person that he would not be stabbed while drinking, or poisoned by the liquor. Notwithstanding the reason has long since ceased, the custom still continues—a remarkable instance of the force of habit.

PLEDGET, in surgery, a small flat tent of lint, laid over a wound to imbibe the matter discharged and keep the wound clean.

PLEIADS, or PLEIADES, in astronomy, a cluster or assemblage of seven stars in the constellation Taurus. They were called by the Latins *vergiliæ*, from *ver*, spring, because of their rising about the vernal equinox.

PLENIPOTENTIARY, a person invested with full power to transact any business; generally, an ambassador from a prince, invested with full power to negotiate a treaty or conclude peace with another prince or state.

PLENUM, in physics, a term denoting that every part of space or extension is full of matter, as is maintained by the Cartesians. Those philosophers who do not admit the idea of a vacuum are called *plenists*.

PLEONASM, in rhetoric, a form of expression in which more words are used than are necessary; a redundancy of words, used, though improperly, in order to express a thought with the greater energy or perspicuity; such as, "I saw it with my own eyes."

PLEONASTE, in mineralogy, a variety of the spinelle ruby; so called from its four facets, sometimes found on each solid angle of the octahedron.

PLETHORA, in medicine, excess of blood, or the state of the vessels of the human body when they are too full or overloaded with fluids.

PLETHRON, or PLETHRUM, in Grecian antiquity, a square measure, the exact contents of which are not certainly known. Some suppose it to correspond with the Roman *juger*, or 240 feet; others say it was the square of a hundred cubits.

PLEURA, in anatomy, a double membrane which covers all the internal cavity of the thorax.

PLEURITIS, or PLEURISY, in medicine, an inflammation of the *pleura* or membrane that covers the inside of the thorax. It is accompanied with fever, pain, difficult respiration and cough.

PLEURONECTES, in ichthyology, a genus of fishes of the *Thoracic* order; comprehending those that are commonly known by the name of flat-fish. They swim constantly obliquely, dwell at the bottom of the water, because they have no air-bladder,

IN MYTHOLOGIC FABLE, THE PLEIADES WERE THE SEVEN DAUGHTERS OF ATLAS, WHO, PURSUED BY ORION, WERE CHANGED BY JUPITER INTO DOVES.

and frequently bury themselves in the sand. The plaice, flounder, sole, turbot, and dab, are the principal species.

PLEURO-PNEUMO'NIA, in medicine, a mixture of pleurisy and peripneumony.

PLEURORTHOPNÆ'A, in medicine, a kind of pleurisy, or disease in the side, in which the patient cannot breathe unless he keeps his body in an upright posture.

PLEX'US, in anatomy, any union of vessels, nerves, or fibres, in the form of network.

PLI'CA POLON'ICA, a disease of the hair, peculiar to Poland and the neighbouring countries. In this disease the hair of the head is matted or clotted by means of an acrid humour which exudes from the hair.

PLINTH, in architecture, a flat square member in the form of a brick. It is used as the foundation of columns, being the flat square table under the moulding of the base and pedestal at the bottom of the order.——*Plinth of a wall*, two or three rows of bricks advanced from the wall in form of a platband; and in general, any flat high moulding that serves in a front wall to mark the floors, &c.

PLOT, any stratagem or plan of a complicated nature, adapted to the accomplishment of some mischievous purpose; as a *plot* against the government, or against the life of a sovereign.——*Plot*, in dramatic writings, the fable of a tragedy or comedy, but more particularly the knot or intrigue, comprising a complication of incidents which are ultimately unfolded.——*Plot*, in surveying, the plan or draught of any field, farm, &c. surveyed with an instrument, and laid down in the proper figure and dimensions.

PLOUGH, in agriculture, an important implement for turning over the exhausted soil and turning up the fresh and fertile parts, so contrived as to save the labour of digging. They are of various constructions, according to the soil, and are generally drawn by horses, though in some places by oxen.——*Steam-ploughs.* Certain operations of the farm, such as thrashing, chaff-cutting, &c., which could be performed by fixed power, have partially occupied the attention of mechanics, and suitable machinery driven by water, wind, or small steam-engines, has to some extent been advantageously used for such purposes. But the idea of a farm to be altogether cultivated by steam, in lieu of animal power, has hitherto been treated as visionary and absurd, except by a few individuals, and one or two agricultural societies, who have enforced, in their publications, the practicability and importance of applying steam to effect the more laborious operations of agriculture. It appears, however, that Mr. Heathcoat, the ingenious and well known inventor of the lace machinery, has the merit of having conceived and planned this additional and remarkable contribution to science. The invention, after years of costly experiment, has been matured and perfected through the enterprising liberality of Mr. Heathcoat, assisted by the mechanical ingenuity and perseverance of Mr. Josiah Parkes, civil engineer, whom he selected to carry his designs into effect. The first machine has been constructed expressly for the cultivation of bogs, and has been practically and successfully worked in Lancashire, on Red Moss, near Bolton-le-Moors. At a late experimental trial of the steam-ploughs, as the public prints inform us, "two ploughs of different construction were put in action, to the admiration of the spectators; particularly the one last invented, which is double-acting, or made with two shares in the same plane, so that it returns at the end of a 'bout,' taking a new furrow without loss of time. The perfect mechanism of this plough—the action of the working coulters and under-cutting knives, which divide every opposing fibre of the moss—the breadth and depth of the furrow turned over—the application of a new and admirable means of traction, instead of chains or ropes—together with the facility with which the machine is managed, and the power applied to the plough, especially interested and surprised all present. The speed at which the plough travelled was 2½ miles per hour, turning furrows 18 inches broad by 9 inches in depth, and completely reversing the surface. Each furrow of 220 yards in length was performed in somewhat less than three minutes, so that in a working day of twelve hours, this single machine would with two ploughs turn over ten acres of bog land! The machine which bears the steam-engines is itself locomotive; but as the ploughs are moved at right angles to its line of progress, not dragged after it, the machine has to advance only the width of a furrow, viz. eighteen inches, whilst the ploughs have travelled a quarter of a mile; in other words, the machine has to be moved only eleven yards, in the time that the ploughs have travelled five-and-a half miles, and turned over a statute acre of land. This is, in truth, the prime distinguishing feature of the invention; and which seems to be essential to the economical application of steam to husbandry; for it is evident, that were it requisite to impel the machine with a velocity equal to that of the ploughs, by dragging them with it, a great proportion of the power of the engines would be uselessly expended."——That this is no idle theory may be further learned from the fact of its being in contemplation to use steam-ploughs in some of our colonies; as the following account, copied from a Glasgow paper, shows: "Lately a trial was made in one of the fields on the estate of Possil, near Glasgow, of the steam-plough, intended for the cultivation of the sugar lands of British Guiana. This trial was completely successful, and gave great satisfaction to the numerous party who witnessed it. The field was laid out similar to those in the colony, which have canals on each side running parallel with one another. The machinery consists of two iron boats, one containing a small high pressure steam-

THE CHIEF DIFFICULTY IN THE CONSTRUCTION OF A PLOUGH IS THAT OF ADAPTING IT TO ALL SOILS, ALL SEASONS, AND ALL DEPTHS.

LORD SOMERVILLE'S SINGLE PLOUGH IS CONSIDERED AN EXCELLENT ONE FOR THE PURPOSE OF BREAKING UP DEEP STIFF SOILS.

engine, with a drum, round which the endless chain or rope is coiled, and the other a reversing pulley, by means of which the chain or rope is extended, and allowed to work whichever way is required; the ploughs are attached to this chain, and made to work backwards and forwards with great rapidity and accuracy. Mr. M'Rae, whose long residence in the colony, and great practical experience of the working of sugar estates, has directed his attention, for a considerable time past, to the great and absolute necessity of employing some other power to supersede cultivation by manual labour, invented the steam-plough, which was executed by Messrs. Edington and Sons, Phœnix Iron-works."

Although we have occupied so much of our space in the foregoing accounts of the *steam-plough*, we cannot yet dismiss the subject; for at the very moment we are putting this sheet to press, our attention is arrested by an article in the "Literary Gazette" (Aug. 29, 1840) on what is termed the "*New Agrarian System.*" It is the invention of Mr. Pinkus, and applies to the entire agriculture and cultivation of the earth by means of steam power! The editor thus proceeds:—"At the Colosseum, in the Regent's Park, we attended and witnessed the working of a model of certain machinery, by means of which this extraordinary revolution is proposed to be brought about. It consists of a stationary steam-engine, which communicates by pipes laid a few inches under ground, and branching in all the necessary directions, with the machine for performing every kind of husbandry and agricultural labour,—ploughing, harrowing, sowing, reaping, draining, levelling, cutting down wood, &c. &c. Mr. Pinkus states his decided opinion that locomotive power, similar to that employed on railroads, can never be effectively used for agricultural purposes; and goes on to say that he has invented and adopted 'the only feasible means of using steam power in the cultivation of the soil, the easy practicability of which no one conversant with practical science can hesitate to assent to; they admit of the use of stationary steam power, or water power; no other methods of application can be so efficient or economical. By these improved methods, detailed in the enrolled specifications of the several patents, distant fields, comprising many square miles, near to or surrounding a station, are combined with it through the medium of pipes laid under ground, leading from the station and passing into the fields, in such proportion as that in every square mile there shall be a half-mile in length of mains or pipes; through these the power of the stationary engine is transmitted into the fields by an auxiliary vacuum power, which the mechanical combinations of this invention admit of being taken up in any parts of such fields to put in motion a locomotive engine of light weight by vacuum power, which engine has neither boiler nor furnace. To this engine various agricultural implements are from time to time appended, that perform all the operations herein enumerated. Thus one of the most effective philosophical principles in nature is made available, through the agency of fixed engines, to the purposes of agriculture.' The engine alluded to is propelled by a hollow, flexible tube, working round a roller parallel to the axle, and which, by a slight check, may be reversed at pleasure, so as to operate backwards and forwards, and in any direction. The ploughshares, harrows, hoes, scythes, or whatever is wanted, are readily fixed to this movement, and do the business of many horses and many persons. Mr. P. goes on to observe:—'The power of stationary engines being unlimited, the efficiency of the locomotive impelling machine can be varied from time to time, to suit the exigencies of field labour. Stationary engines, whether for steam or water, yield power in the cheapest form. It is, in fact, a well-understood principle in physics, that whatever moving force be expended in producing the rarefaction of air in—say, in an extended main hermetically sealed—must necessarily be followed by a corresponding force at a given distance from the prime mover or generator of force when taken up from the main, and made to act on pistons moving air-tight in cylinders, and exposed to the free action of incumbent atmospheric pressure. The whole power of the stationary engine is transmitted and taken up in a given time without any loss in the transmission. The only mechanical parts of the locomotive here used are those which, in similar machines, sustain but little wear and tear, or mechanical disarrangements. By it spade labour may be applied so rapidly and cheaply as to dispense with the use of the ploughshare altogether, thus deriving the well-known benefit of spade labour in thoroughly pulverising and tilling the soil. For opening trenches in the stiffest soils its power is efficient; in bog or marshy lands it is equally so; and for making tiles to effect drainage, or for mixing and spreading soils, it is the moving power. Not only in Great Britain and Ireland may the value of landed property be greatly enhanced by the application of this invention, but, in those colonies where the value of an estate is estimated not so much by the number of acres as by the amount of labour which is brought to bear on lands, it will increase their value in a fourfold proportion; and a not less important object may, by its introduction, be attained in those colonies where slave labour is mainly depended upon. So effectually will it compete with such labour, and so reduce its value, that, it is hoped, it will be found to be one of the most effectual means of any yet suggested, of conducing to the annihilation of that iniquitous system—slave traffic.' For the present (says the Editor) we must content ourselves with this annunciation; for it would lead us to a very prolonged discussion to touch on the mighty changes which the adoption of such a mode of raising produce must cause. The land of Britain, estimated at 3,000,000,000 acres, of which

COOKE'S IMPROVED DRILL AND HORSE-HOE ARE IN GENERAL USE IN NORFOLK, SUFFOLK, AND VARIOUS OTHER PARTS OF ENGLAND.

40,000,000, capable of feeding 20,000,000 of people, are as yet uncultivated, offers an immensity for experiment. A million of horses might be dispensed with; the cost of which would be a saving of 30,000,000*l.* per annum. In the meantime this steam power, which has done so much for our manufactories (though applied to a total value of only 350,000,000*l.*), has never been made to serve the infinitely more important uses of agriculture. What may come of it as yet we cannot foresee; but if the plan can be carried into effect on a large scale, it must be prodigious—incalculable!"

PLO'VER, (*pluvialis*), in ornithology, the name of several species of birds of the genus *Charadrius;* as the green plover, about the size of the common lapwing; and the grey plover, with a black beak and green legs, a very beautiful bird.

PLUM *(prunus)*, in botany, a genus of fruit trees, of which there are numerous varieties, differing in colour, taste, size, and form; but the most esteemed of all is the green-gage, or *reine Claude.*

PLUMB, PLUMB'-LINE, or PLUM'-MET, a leaden weight attached to a string, by which depths are sounded perpendicularly, and perpendiculars are taken by carpenters, masons, &c. Sometimes the string descends along a wooden ruler, &c. raised perpendicularly on another; in which case it becomes a level.

PLUMBA'GO, GRAPHITE, or BLACK-LEAD, a mineral consisting of carbon and iron, much used in drawing, and for making pencils. [See BLACK-LEAD.]——*Plumbago,* in botany, a genus of plants, class 5 *Pentandria,* order 1 *Monogynia.* The species are perennials.

PLUMBA'TA, in antiquity, a scourge used by the Romans, which was so called because it was armed with lead.

PLUM'BI SUBCARBO'NAS, in chemistry, subcarbonate of lead, commonly called ceruse or white lead.

PLUM'BI SUPERACE'TAS, in chemistry, formerly called sugar of lead from its sweet taste. It possesses sedative and astringent qualities in a very high degree, but is not altogether harmless.

PLUM'BUM, Lead. [See LEAD.]

PLUME, or PLU'MULE, in botany, the ascending scaly part of the corculum or heart of a seed, which rises and becomes the stem or body. It extends itself into the cavity of the lobes, and is terminated by a small branch resembling a feather, from which it derives its name.——*Plume,* a set of feathers for ornament, particularly ostrich feathers.

PLUME-AL'UM, in mineralogy, a kind of asbestos.

PLU'MIPED, in ornithology, a fowl that has feathers on its feet.

PLUM'MING, among miners, the operation of finding by means of a mine dial the place where to sink an air shaft, or to bring an adit to the work, or to find which way the lode inclines.

PLU'MOSE, something formed in the manner of feathers, with a stem and fibres issuing from it on each side; as the antennæ of certain moths, butterflies, &c.—— In botany, a *plumose bristle* is one that has hairs growing on the sides of the main bristle. *Plumose pappus,* or down, is a flying crown to some seeds, composed of feathery hairs.

PLU'RAL, in grammar, an epithet applied to that number of nouns and verbs which is used when we speak of more than one; or that which expresses a plurality or number of things.

PLURAL'ITY, a number consisting of two or more of the same kind; as a *plurality* of worlds, &c.——*Plurality of benefices,* or *livings,* is where the same clergyman holds two or more spiritual preferments, with cure of souls. In a plurality of livings, the first, *ipso facto,* becomes void; on which account, the patron may present to it, provided the clerk be not qualified by dispensation, &c. to hold more livings than one, the law strictly enjoining residence.

PLUS, in algebra, a character marked thus +, used as the sign of addition.

PLUSH, a kind of shaggy cloth, with a velvet nap on one side, composed regularly of a woof of a single woollen thread and a double warp, the one wool of two threads twisted, the other of goats' or camels' hair. There are also some plushes made entirely of worsted, and others wholly of hair.

PLUTON'IC, or PLUTO'NIAN, pertaining to or designating the theory of the formation of rocks and mountains from fire. The *Plutonists* say that the formation of the world in its present state is to be ascribed to igneous fusion, in opposition to the *Neptunists,* who maintain that it has a watery origin. [See GEOLOGY, &c.]

PLUVIAM'ETER, an instrument for ascertaining the quantity of water that falls in rain and snow, in any particular climate or place.

PNEUMAT'ICS, the science which treats of the mechanical properties of elastic or aeriform fluids: such as their weight, density, compressibility, and elasticity. The air being a heavy body, presses like other fluids, in every direction, upon whatever is immersed in it, and in proportion to the depths. This pressure may be thus shown:—Cover a wine glass, completely filled with water or wine, with a piece of writing paper: then place the palm of the hand over the paper, so as to hold it tight and accurately even. The glass may then be turned upside down, and the hand removed without the water running out. The pressure of the air upon the paper sustains the weight of water. The air can also be compressed into a much less space than it naturally occupies. Take a glass tube open only at one end: it is of course full of air: plunge the open end into a bowl of water, and you see the water rises an inch or so in the tube, the air, therefore, which before filled the whole length of the tube, is compressed into a smaller space. The pressure of the atmosphere is capable of

IN ORDER TO DETERMINE THE HEIGHT OF THE ATMOSPHERE, THE DENSITY OF THE AIR AT DIFFERENT HEIGHTS MUST BE ASCERTAINED.

supporting about 33 feet of water or about 29 or 30 inches of quicksilver. If a glass tube upwards of thirty-one inches long be filled with quicksilver and have its aperture immersed in a basin of the same fluid, the altitude of the mercury in it will be found to vary both at different times and in different places. Hence it appears that the weight of the atmosphere is variable; and the above-mentioned tube filled with quicksilver has, from its showing the actual weight of the atmosphere, been called a BAROMETER. By removing the pressure from air it always expands, nor is it known to what degree this expansion will reach. By increasing the pressure, it may be condensed into any given space, however small, nor has this condensation any known limits. The density of the air is in proportion to the force that compresses it. In consequence of numerous investigations into the mechanical properties of the air, which were made by experimental philosophers in England, France, and Germany, after Torricelli had clearly demonstrated its pressure, not only was the barometer invented (1643), but it gave rise to a variety of pneumatic machines, as the air-pump, air-balloon, thermometer, &c. [For further information, the reader is referred to the articles ATMOSPHERE, AIR, AIR-PUMP, BAROMETER, FLUIDS, GRAVITY, &c.]

[From a desire to ascertain the result of certain aeronautic experiments which were much talked of at the time we commenced this volume, we omitted the article "AEROSTATION," and merely gave a definition of the word BALLOON, reserving for this place whatever we might at the time deem essential or most interesting. Instead. therefore, of reverting to the art when in its infancy, and narrating the trite accounts of former adventurers (whose imperfect knowledge of aerial navigation when compared with the practical and scientific data obtained by the repeated ascents of Mr. Green takes from them all their value), we have thought it advisable to confine our attention to the one grand aeronautic expedition of modern date, and to give that one, as it well deserves, without mutilation or unnecessary abridgment. We hardly need add, that it is the far-famed voyage from London to Nassau-Weilburg, accomplished in November, 1836, by R. Hollond, Esq., Mr. Green, and Mr. Monck Mason, the writer of the narrative.]

"It is not," as Mr. M. observes, "in the mere issue, successful or unsuccessful, that the chief merit or importance of such an enterprise can alone be said to consist. Designed with a view to special ends, and undertaken for the sole purpose of ascertaining and establishing the efficacy of certain improvements in the art, from which most beneficial results *were*, and I am now happy to add *are*, most likely to accrue, it becomes no less an obligation to ourselves than to the world in general, to make them partakers in the knowledge of whatever interesting or important circumstances either accompanied the progress of our expedition, or may justly be expected to attend the adoption of those improvements, the merits of which it was our sole object in the present instance to confirm. From the time of the first discovery of the properties and power of the balloon, up to a late period (already a lapse of more than half a century), a variety of obstacles apparently insurmountable continued to obstruct the progress, and paralyze the efforts of all who sought to render it obedient to the sway of human will, and subservient to the purposes of human life. The chief of these impediments consisted in the uncertainty and expense attending the process of inflation from the employment of hydrogen gas; the dangers considered inseparable from the practice of the art; the difficulties which hitherto have baffled all attempts to give a direction to the ungovernable mass, and the impossibility which all previous aeronauts have experienced of remaining in the air a sufficient time to ensure the attainment of a sufficient distance. To remove these obstacles and reduce the aerial vehicle to a more certain issue, a vast extent of actual experience, united to an intellect capable of turning it to a proper account, was absolutely required; and it would be an act of much injustice were I not to declare, that it is to the combination of both these in the person of Mr. Charles Green, that we are indebted for the entire results of all that is beneficial in the practice, or novel in the theory of this, the most delightful and sublime of all sublunary enjoyments. It was to him, and to his discovery of the applicability of coal gas to the purposes of inflation, that we owe the removal of the first of those impediments in practice, which till then had continued to weigh down with a leaden hand the efforts of the most indefatigable and expert, and had, in fact, bid fair to quench the incipient science in its very onset. Up to the period of that discovery, the process of inflation was one, the expense of which was only to be equalled by its uncertainty: two, and sometimes even three days of watchful anxiety, have been expended in the vain endeavours to procure a sufficiency of hydrogen to fill a balloon, from which, on account of its peculiar affinities, it continued to escape almost as fast as it was generated; during all which time the various casualties of wind and weather, the inevitable imperfections of a vast and cumbrous apparatus, and, above all, the enormous expense attending this operation, were to be incurred and endured, for the sole purpose, and with the sole object, of remaining for a few hours helplessly suspended in the air. Under such disadvantages all prospect of advancement in the art had speedily disappeared; and it was only by the timely intervention of Mr. Green's ingenious application that the art itself was saved from a premature extinction.—Aerostation had gone to sleep, when, roused by this discovery, she awoke to redoubled efforts, and rendered that, in the hands of the *skilful*, a profession and a profit, which before had ever been a matter

THE DENSITY OF THE AIR FROM THE SURFACE OF THE EARTH IS BELIEVED TO DECREASE IN A GEOMETRICAL PROPORTION.

of doubt, difficulty, and distress.* With respect to the next of those impediments, which, in the opinion of mankind, might have continued to oppose the adoption of aerostation as an organ of general utility—I mean the danger usually considered as consequent upon the exercise of the art—much is not required to prove the fallacy of such fears: two hundred and twenty-six ascents [the number of ascents made by Mr. Green up to that time], undertaken at all periods of the year, without one disappointment to the public, and without one solitary instance of fatal consequence, or even of an accident of disagreeable results (except from the intervention of malice),† ought to be a sufficient proof of how little danger is to be apprehended in the practice of aerostation, when under the management of a skilful leader, and with the aid of those improvements to which his experience has given rise. It is not from the bungling efforts of unqualified persons that any judgment should be formed on this or other matters of practical detail; and where that skill is present, without which no one has a right to expect success, and those precautions have been observed which experience has shown to be requisite, I do not hesitate to say, that the practice of aerostation is as devoid of extraordinary danger as that of any other mode of conveyance hitherto adopted. Great, however, as are the merits of Mr. Green's previous discoveries, they may be said to yield in importance to that whereby he has succeeded in enabling the aeronaut to maintain the power of his balloon undiminished during the continuance of the most protracted voyage it could ever be required to perform.‡ In order fully to comprehend the value of this discovery, which more immediately formed the object of our late enterprise, it is necessary that some idea should be had of the difficulties it was intended to obviate, and of the effects they were calculated to produce upon the further progress of aerostation. When a balloon ascends to navigate the atmosphere, independent of the loss of power occasioned by its own imperfections, an incessant weight of its resources in gas and ballast becomes the inevitable consequence of its situation. No sooner has it quitted the earth than it is immediately subjected to the influence of a variety of circumstances tending to create a difference in its weight; augmenting or diminishing, as the case may be, the power by the means of which it is supported. The deposition or evaporation of humidity to the extent, in proportion to its size, of several hundredweight; the alternate heating and cooling of its gaseous contents by the remotion or interposition of clouds between the object itself and the influence of the solar rays, with a variety of other more secret, though not less powerful agencies, all so combine to destroy the equilibrium which it is the main object of the aeronaut to preserve, that scarcely a moment passes without some call for his interposition, either to check the descent of the balloon by the rejection of ballast, or to control its ascent by the proportionate discharge of gas; a process by which, it is unnecessary to observe, the whole power of the balloon, however great its dimensions, must in time be exhausted, and sooner or later terminate its career by succumbing to the laws of terrestrial gravitation. By the simple contrivance of a rope of the requisite magnitude and extent, trailing on the ground beneath (and if over the sea, with a sufficient quantity of liquid ballast contained in vessels floating on its surface), have all these difficulties been overcome, and all the features of the art completely and effectually reversed. Harnessed to the earth or ocean, by a power too great for her to resist, it is in vain the balloon endeavours to change the level of her onward course; every foot she would have been otherwise compelled to add to her elevation now only adds to her weight, by her endeavours to abstract from the earth a further portion of that rope which is dependent upon its surface; while, on the other hand, every foot she would have been inclined to descend, had she been at liberty as heretofore, now only abstracts from the weight which draws her downward, by throwing on the earth the labour of supporting an additional portion of the guide-rope, which she would otherwise have had

* Independent of the diminution of expense and risk, from the employment of coal-gas in preference to hydrogen, for the purpose of inflation, there are other advantages of great importance, one of which merits special notice: I allude to the superior facility with which the latter is retained in the balloon, owing to the greater subtilty of the particles of hydrogen, and the strong affinity which they exhibit for those of the surrounding atmosphere. In a balloon, sufficiently perfect to retain its contents of coal-gas unaltered in quality or amount for the space of six months, an equal quantity of hydrogen could not be maintained in equal purity for an equal number of weeks.

† The "intervention of malice" here alluded to occurred some years before at Cheltenham, when some ill-disposed person contrived to sever the ropes of the car in such a manner as not to be perceived before the balloon had reached a considerable elevation, whereby Mr. Green and his companion, Mr. Griffiths, were precipitated to the ground, and very narrowly escaped destruction. To this we may add, that Mr. Green's trip, in company with Mr. Macdonnell, from Cremorne House, Chelsea, on the 10th of August, 1840, had well nigh proved fatal to both, the violence of the wind having rendered their descent in the highest degree perilous.

‡ Mr. Green has since (1840) given notice of his intention, at no distant day, of crossing from the American continent to Europe, and, by taking advantage of the prevalent westerly winds at certain seasons, confidently predicts success.

to sustain without relief. Limited to one unalterable plane, all the fluctuations above mentioned, whereby her irreparable stock of power became subjected to incessant waste, have thus completely been avoided, and not only her ascensive force maintained in its full vigour throughout a period determinable solely by her own imperfections, but at all times, and under all circumstances, over the boundless ocean, without a landmark in the densest fog, and throughout the darkest night the exact direction of her course, as well as the very rate of her progress determined with the utmost facility, and most infallible results. The main feature however in this discovery, is the altered aspect under which it enables the aeronaut to regard the perils of the sea, and the consequent extension it bestows upon the hitherto limited sphere of his relations. The ocean, now no longer the dreaded enemy of the aerial voyager, becomes at once his greatest friend; and instead of opposing his progress, offers him advantages more certain and efficacious than even the earth itself, with all its presumed security, is calculated to contribute. Such then was the actual state of aerostation when Mr. Robert Hollond, a gentleman who had long cultivated a practical acquaintance with the art, resolved to afford an opportunity for a full display, and unequivocal determination of the merits of these discoveries, by undertaking at his own expense to fit out an expedition, under the guidance of Mr. Green (in which he was so kind as to include me), for the purpose, and with the intention of starting from London and proceeding (in whatever direction the winds at that time prevailing might happen to convey us), to such a distance as would suffice to answer the ends for which the voyage was especially designed. Accordingly the proprietors, Messrs. Gye and Hughes, having kindly conceded the use of the great Vauxhall Balloon, and of their premises, for the purpose of the ascent; after several unavoidable delays, occasioned chiefly by the weather, the day of departure was fixed for Monday, Nov. 7th, 1836, and the process of inflation having been commenced at an early hour, everything was got ready for starting by one o'clock in the afternoon of the same day. The appearance which the balloon exhibited previous to the ascent, was no less interesting than strange. Provisions, which had been calculated for a fortnight's consumption in case of emergency; ballast to the amount of upwards of a ton in weight, disposed in bags of different sizes, duly registered and marked, together with an unusual supply of cordage, implements, and other accessories to an aerial excursion, occupied the bottom of the car; while all around the hoop and elsewhere appended, hung cloaks, carpet-bags, barrels of wood and copper, coffee-warmer, barometers, telescopes, lamps, wine jars and spirit flasks, with many other articles, designed to serve the purposes of a voyage to regions where, once forgotten, nothing could be again supplied. Among the other matters with which we had taken the precaution to provide ourselves, were passports directed to all parts of the continent, specifying the peculiar nature of our voyage, and entitling us to exemption from the usual formalities of office. Thus prepared, and duly accoutred, at half-past one o'clock the balloon was dismissed from the ground, and rising gently under the influence of a moderate breeze, bore speedily away towards the south-east, traversing in her course the cultivated plains of Kent, and passing in succession nearly over the towns of Eltham, Bromley, Footscray, and others, whose variegated outlines beautifully diversified the rich landscape that lay beneath us. The weather was uncommonly fine for the time of year; a few light clouds alone floated in the sky, and at least as useful as ornamental, served to indicate the existence of different currents at different altitudes: an information of which, it will be seen hereafter, we were enabled to avail ourselves with much effect. Continuing in a south-easterly direction, at forty-eight minutes past two we crossed the Medway, at the distance of about six miles to the west of Rochester, and in little more than an hour after were in sight of the city of Canterbury, the lofty towers of its cathedral bearing distant about two miles, in a westerly direction. In a few minutes after we obtained our first view of the sea, brightening under the last rays of a setting sun, and occupying the extreme verge of the horizon, in the direction in which we were now rapidly advancing. It was at this period of our voyage that the first opportunity occurred of showing how far it was possible for the skilful and experienced aeronaut to influence the course of his aerial vessel, by availing himself of the advantages which circumstances frequently place at his disposal. Shortly after we had lost sight of the city of Canterbury a considerable deviation appeared to have taken place in the direction of our route. Instead of pursuing our former line of south by east, which was that of the upper current, by means of which we had hitherto advanced, it became apparent that we were now rapidly bearing away upon one which tended considerably to the northward, and which, had we continued to remain within the limits of its influence, would have shortly brought us to sea, in the direction of the North Foreland. As it had all along been an object to proceed as near to Paris as circumstances would permit,* we resolved to recover as soon as possible the advantages which a superior current had hitherto afforded us, and accordingly rose to resume a station

* The proprietors of the balloon having contemplated making an ascent from Paris, and Mr. Hollond having undertaken to transfer the balloon thither, it became a consideration with us not to increase our distance from that capital more than was consistent with the main object of the expedition.

ALL THE MODIFICATIONS OF MOTION OBSERVED IN WATER CONDUITS TAKES PLACE ALSO IN THE PASSAGE OF AIR THROUGH PIPES.

upon our previous level. Nothing could exceed the beauty of this manœuvre, or the success with which the balloon acknowledged the influence of her former associate. Scarcely had the superfluous burden been discharged proportioned to the effect required, when slowly she arose, and sweeping majestically round the horizon, obedient to the double impulse of her increasing elevation and the gradual change of current, brought us successively in sight of all those objects which we had shortly before left retiring behind us, and in a few minutes placed us almost vertically over the castle of Dover, in the exact direction of crossing the straits between that town and Calais, where it is confined within its narrowest limits. It was forty-eight minutes past four when the first line of waves breaking on the beach appeared beneath us, and we might be said to have fairly quitted the shores of our native soil, and entered upon the hitherto dreaded regions of the sea. It would be impossible not to have been struck with the grandeur of the prospect at this particular moment of our voyage; the more especially as the approaching shades of night rendered it a matter of certainty that it would be the last in which earth would form a prominent feature, that we might expect to enjoy for a considerable lapse of time. Behind us, the whole line of English coast, its white cliffs melting into obscurity, appeared sparkling with the scattered lights, which every moment augmented, among which the light-house at Dover formed a conspicuous feature, and for a long time served as a beacon whereby to calculate the direction of our course. On either side below us the interminable ocean spread its complicated tissue of waves without interruption or curtailment, except what arose from the impending darkness, and the limited extent of our own perceptions; on the opposite side a dense barrier of clouds rising from the ocean like a solid wall fantastically surmounted, throughout its whole length, with a gigantic representation of parapets and turrets, batteries and bastions, and other features of mural fortifications, appeared as if designed to bar our further progress, and completely obstructed all view of the shores, towards which we were now rapidly drawing nigh. In a few minutes after we had entered within its dusky limits, and for a while became involved in the double obscurity of the surrounding vapours and of the gradual approach of night. Not a sound now reached our ears; the beating of the waves upon the British shores had already died away in silence, and from the ordinary effects of terrestrial agitation our present position had effectually excluded us. In this situation, we prepared to avail ourselves of those contrivances, the merits of which, as I have already stated, it was one of the main objects of our expedition to ascertain; and consequently, to provide against the loss of power by the increase of weight proceeding from the humidity of the atmosphere, naturally to be expected on the approach of night, we commenced lowering the copper vessels which we had provided for the occasion. Scarcely, however, had we completed our design, and were patiently awaiting the descent we had anticipated, when the faint sound of the waves beating against the shore again returned upon our ears, and awakened our attention. The first impression which this event was calculated to convey, was that the wind had changed, and that we were in the act of returning to the shores we had so shortly before abandoned. A glance or two, however, served to show us the fallacy of this impression; the well-known lights of Calais and of the neighbouring shores were already glittering beneath us; the barrier of clouds which I have before mentioned as starting up so abruptly in our path, as abruptly terminated; and the whole adjacent coast of France, variegated with lights, and ripe with all the nocturnal signs of population, burst at once upon our view. We had, in fact, crossed the sea; and in the short space of about one hour, from the time we had quitted the shores of England, were floating tranquilly, though rapidly, above those of our Gallic neighbours. It was exactly fifty minutes past five when we had thoroughly completed this *trajet*; the point at which we first crossed the French shore bearing distant about two miles to the westward of the main body of the lights of Calais, our altitude at the time being somewhat about three thousand feet above the level of the ocean. As it was now perfectly dark we lowered a Bengal light, at the end of a long cord, in order to signify our presence to the inhabitants below; shortly after, we had the satisfaction to hear the beating of drums, but whether on our account, or merely in performance of the usual routine of military duty, we were not at the time exactly able to determine. Before dismissing the sea, a word or two seems required to counteract a vague and incorrect impression regarding its peculiar influence upon the buoyancy of the balloon, arising from the difficulties experienced by Messrs. Blanchard and Jeffries in their passage of the same straits in the year 1785, and the apparently unaccountable remotion of their difficulties as soon as they had reached the opposite coast. So many, however, are the circumstances within the range of aeronautical experience to which, without intruding upon the marvellous, or calling new affinities into existence, these effects can be satisfactorily attributed, that the actual difficulty lies in ascertaining to which of them they are most likely to have owed their origin; of these the increase of weight by the deposition of humidity on the surface of the balloon, occasioned by the colder atmosphere through which the first part of their journey had to be pursued, and the subsequent evaporation of the same by the rise of temperature to which they necessarily became subjected as soon as they came within the calorific influence of the land, is in itself quite sufficient to explain the difference that existed in the buoy-

ancy of the balloon during the different stages of its progress. Even in the absence of any humidity whereby the actual weight of the balloon could have been increased, the mere diminution of temperature, by condensing its gaseous contents; and their subsequent rarefaction by the altered temperature they were sure to encounter when they reached the opposite coast, is more than enough to account for much greater effects than even those to which it is here intended to apply. As far as we were concerned certainly no such uncommon impression was observable, nor did we experience any diminution of ascensive power in our transit across the sea, beyond what we should have expected under similar circumstances over a similar extent of land. The night having now completely closed in, and no prospect of any assistance from the moon to facilitate our researches, it was only by means of the lights which either singly or in masses appeared spreading in every direction, that we could hope to take any account of the nature of the country we were traversing, or form any opinion of the towns or villages which were continually becoming subjected to our view. The scene itself was one which exceeds description. The whole plane of the earth's surface, for many and many a league around, as far and farther than the eye distinctly could embrace, seemed absolutely teeming with the scattered fires of a watchful population, and exhibited a starry spectacle below that almost rivalled in brilliancy the remoter lustre of the concave firmament above. Incessantly during the earlier portion of the night, ere the vigilant inhabitants had finally retired to rest, large sources of light, betokening the presence of some more extensive community, would appear just looming above the distant horizon in the direction in which we were advancing, bearing at first no faint resemblance to the effect produced by some vast conflagration, when seen from such a distance as to preclude the minute investigation of its details. By degrees, as we drew nigh, this confused mass of illumination would appear to increase in intensity, extending itself over a larger portion of the earth, and assuming a distincter form and a more imposing appearance, until at length, having attained a position from whence we could more immediately direct our view, it would gradually resolve itself into its parts, and shooting out into streets, or spreading into squares, present us with the most perfect model of a town, diminished only in size, according to the elevation from which we happened at the time to observe it. It would be very difficult, if not impossible, to convey to the minds of the uninitiated any adequate idea of the stupendous effect which such an exhibition, under all its concomitant peculiarities, was calculated to create. That we were, by such a mode of conveyance, amid the vast solitude of the skies, in the dead of night, unknown and unnoticed, secretly and silently reviewing kingdoms, exploring territories, and surveying cities, in such rapid succession as scarcely to afford time for criticism or conjecture, was in itself a consideration sufficient to give sublimity to far less interesting scenes than those which formed the subject of our present contemplations. If to this be added the uncertainty that from henceforward began to pervade the whole of our course—an uncertainty that every moment increased as we proceeded deeper into the shades of night, and became further removed from those landmarks to which we might have referred in aid of our conjectures, clothing everything with the dark mantle of mystery, and leaving us in doubt more perplexing even than ignorance as to where we were, whither we were proceeding, and what were the objects that so much attracted our attention—some faint idea may be formed of the peculiarity of our situation and of the impressions to which it naturally gave rise. In this manner, and under the influence of these sentiments, did we traverse with rapid strides a large and interesting portion of the European continent, embracing within our horizon an immense succession of towns and villages, whereof those which occurred during the earlier part of the night, the presence of their artificial illumination alone enabled us to distinguish. Among these latter, one in particular, both from its own superior attractions, the length of time it continued within our view, and the uninterrupted prospect which our position directly above it enabled us to command, captivated our attention and elicited constant expressions of mingled admiration and surprise. Situated in the centre of a district which actually appeared to blaze with the innumerable fires wherewith it was studded in every direction to the full extent of all our visible horizon, it seemed to offer in itself, and at one glance, an epitome of all those charms which we had been previously observing in detail. The perfect correctness with which every line of street was marked out by its particular line of fires; the forms and positions of the more important features of the city, the theatres and squares, the markets and public buildings, indicated by the presence of the larger and more irregular accumulation of lights, added to the faint murmur of a busy population still actively engaged in the pursuits of pleasure or the avocations of gain, all together combined to form a picture which for singularity and effect certainly could never have been before conceived. This was the city of Liege, remarkable from the extensive iron-works which, abounding in its neighbourhood, occasioned the peculiar appearance already described, and at the time led to that conjecture, concerning its identity, the truth of which a subsequent inquiry enabled us to confirm. This was the last spectacle of the kind which we were destined to enjoy. Scarcely had we completely cleared the town and the fiery region in which it was embosomed, ere an unbroken obscurity, more profound than any we had yet expe-

WHATEVER ACCUMULATES THE AIR IN ONE PLACE, AND DIMINISHES IT IN OTHER PLACES, MUST NECESSARILY OCCASION A WIND.

IF THE AIR BE SUDDENLY CONDENSED IN ANY PLACE, ITS SPRING OR ELASTICITY WILL BE SUDDENLY DIMINISHED.

rienced, involved us in its folds, and effectually excluded every terrestrial object from our view. It was now past midnight, and the world and its inhabitants had finally committed themselves to repose. Every light was extinguished, and every sound hushed into silence; even the cheerful tones of the vigilant watch-dog, which had frequently contributed to enliven our course during the previous portion of the night, had now ceased; and darkness and tranquillity reigned paramount over the whole adjacent surface of the globe. From this period of our voyage until the dawning of the following day, the record of our adventures becomes tinged with the obscurity of night. The face of nature completely excluded from our view, except when circumstances occasionally brought us into nearer contact with the earth, all our observations during the above period are necessarily confined to a register of incidents and sensations mingled with vague conjectures, and clouded with the mystery wherewith darkness and uncertainty were destined to involve so large a portion of the remainder of our expedition. The moon, to which we might have looked up for companionship and assistance, had she been present, was no where to be seen. The sky, at all times darker when viewed from an elevation than it appears to those inhabiting the lower regions of earth, seemed almost black with the intensity of night; while, by contrast no doubt, and the remotion of intervening vapours, the stars, redoubled in their lustre, shone like sparks of the whitest silver scattered upon the jetty dome around us. Occasionally faint flashes of lightning, proceeding chiefly from the northern hemisphere, would for an instant illuminate the horizon, and after disclosing a transient prospect of the adjacent country, suddenly subside, leaving us involved in more than our original obscurity. Nothing, in fact, could exceed the density of night which prevailed during this particular period of the voyage. Not a single object of terrestrial nature could anywhere be distinguished; an unfathomable abyss of "darkness visible" seemed to encompass us on every side; and as we looked forward into its black obscurity in the direction in which we were proceeding, we could scarcely avoid the impression that we were cleaving our way through an interminable mass of black marble in which we were imbedded, and which, solid a few inches before us, seemed to soften as we approached, in order to admit us still farther within the precincts of its cold and dusky enclosure. Even the lights which at times we lowered from the car, instead of dispelling, only tended to augment the intensity of the surrounding darkness, and as they descended deeper into its frozen bosom, appeared absolutely to melt their way onward by means of the heat which they generated in their course. The cold, during this part of the night especially, was certainly intense, as could be perceived not less from the indications of the thermometer (ranging variously from within a few degrees below to the point of congelation), than from the effects which it produced upon the different liquors wherewith we were provided. The water, coffee, and, of course, the oil in our several vessels, were completely frozen; and it was only by the actual application of the heat of the lamp that we were enabled to procure a sufficiency of the latter to supply our wants during the long term of darkness to which we were about to be subjected. Strange, however, as it may appear, while all around bore such unequivocal testimony to the severity of the cold, the effects produced upon our persons, undefended as they were by any extraordinary precautions, were by no means commensurate to the cause, nor such as even under ordinary circumstances we might fairly have expected to encounter. The reason to which may be attributed this unusual exemption from the consequences of a low temperature, is the absence of all current of air, the natural result of our situation, and one of the peculiar characteristics of aerial navigation. To this intensity of cold, preceded by a long subjection to the action of a humid atmosphere, while floating at a lower elevation, is likewise to be attributed the occurrence of an incident which, for the impression it is calculated to produce upon the minds of those who experience it for the first time, and in ignorance of its cause, merits particularly to be noticed. It was about half-past three in the morning, when the balloon, having gained a sudden accession of power, owing to a discharge of ballast, which had taken place a few minutes before, while navigating too near the earth to be considered perfectly safe in a country, with the main features of which we were totally unacquainted, began to rise with considerable rapidity, and ere we had taken the customary means to check her ascent, had already attained an elevation of upwards of twelve thousand feet. At this moment, while all around is impenetrable darkness and stillness, and darkness most profound, an unusual explosion issues from the machine above, followed instantaneously by a violent rustling of the silk, and all the signs which may be supposed to accompany the bursting of the balloon, in a region where nothing but itself exists to give occasion to such awful and unnatural disturbance. In the same instant, the car, as if suddenly detached from its hold, becomes subjected to a violent concussion, and appears at once to be in the act of sinking with all its contents into the dark abyss below. A second and a third explosion follow in quick succession, accompanied by a recurrence of the same astounding effects; leaving not a doubt upon the mind of the unconscious voyager of the fate which nothing now appears capable of averting. In a moment after all is tranquil and secure; the balloon has recovered her usual form and stillness, and nothing appears to designate the unnatural agitation to which she has been so lately and unaccountably subjected. The occurrence of this phenomenon, however

AIR BEING A FLUID SUBJECT TO THE LAWS OF OTHER FLUIDS, ITS FORCE MAY BE REGULARLY BROUGHT TO A PRECISE COMPUTATION.

strange it may appear, is, nevertheless, susceptible of the simplest resolution, and consists in the tendency to enlargement from remotion of pressure which the balloon experiences in rising from a low to a higher position in the atmosphere, and the resistance to this enlargement occasioned by the net-work previously saturated with moisture, and subsequently congealed into the elliptical form which the dependent weight of the car obliges it to assume, whenever the shrunken capacity of the sphere it encompasses will admit of its longitudinal distension. As this resistance is occasioned by the intervention of a *non-elastic* medium (the ice) which has bound the meshes of the net-work in their contracted form, it is evident that the liberation occasioned by their disrupture will not take place until the internal pressure of the balloon has reached a certain amount; when *suddenly* that liberation is accomplished, attended by those collateral effects which we have already attempted to describe. The impression of the descent of the car in the above representation is evidently a false one; the car, so far from sinking, actually springs up; it is the unexpectedness of such a movement, and its apparent inconsistency with the laws of gravitation that occasions the delusion, the reality of which the concomitant circumstances essentially tend to confirm. Several times during the latter part of the night we had approached so near to the earth, as to be enabled to observe, imperfectly, it is true, some of its most prominent features, and to obtain some faint idea of the nature of the ground beneath us. At these times we appeared to be traversing large tracts of country partially covered with snow, diversified with forests, and intersected occasionally with rivers, of which the Meuse, in the earlier part of the night, and the Rhine, towards the conclusion, formed, as we afterwards learned, the principal objects, both of our admiration and of our conjectures. Large masses of fleecy clouds would at times likewise occupy the lower regions of the atmosphere, intercepting our view as we descended, and for a while leaving us in doubt whether they were not a continuation of those snowy districts which we so frequently had occasion to remark. From out of this mass of vapours, more than once during the night our ears became assailed with sounds bearing so strong a resemblance to the rushing of waters in enormous volumes, or the beating of the waves upon some extensive line of coast, that it required all our powers of reasoning, aided by the certain knowledge we had of the direction we were pursuing, to remove the conviction that we were approaching the precincts of the sea, and transported by the winds, were either thrown back upon the shores of the German ocean, or about to enter upon the remoter limits of the Baltic. It would be endless to enumerate all the conjectures to which this phenomenon gave rise, or the various manners by which we endeavoured to explain its occurrence. Among them those which seemed to obtain the greatest credit, were that the sound proceeded from some vast forest, agitated by the winds; some rapid river rushing impetuously over a broken and precipitous channel: or finally, that the misty vapours themselves, by the mutual action of their watery particles, or their precipitated deposition upon the irregular surface of the earth beneath, had occasioned the murmurs which multiplied throughout so large a space, came to our ears in the formidable accents to which we have above alluded. According as the day drew nigh these appearances vanished, with much of the doubts to which they had given rise. Instead of the unbroken outline of the sea, an irregular surface of cultivated country began gradually to display itself; in the midst of which the majestic river we had noticed for some time back, appeared dividing the prospect, and losing itself in opposite directions amid the vapours that still clung to the summits of the hills, or settled in the valleys that lay between them. Across this river we now directed our course, and shortly after lost sight of it entirely behind the gently swelling eminences by which it was bordered on both sides. It was about six o'clock,* during an ascent which occurred shortly after we had crossed this river, that the balloon having reached a considerable elevation, showed us our first view of the sun, and gladdened us with the prospect of a speedy approach of day. Powerful, indeed, must be the pen which could hope to do justice to a scene like that which here presented itself to our view. The enormous extent of the prospect—the boundless variety it embraced—the unequalled grandeur of the objects it displayed—the singular novelty of the manner under which they were beheld—and the striking contrast they afforded to that situation and those scenes to which we had so long and so lately been confined, are effects and circumstances which no description is capable of representing in the light in which they ought to be placed, in order to be duly appreciated. Better by far to leave it to a fertile imagination to fill in the faint outlines of a rough and unfinished sketch, than, by a lame and imperfect colouring, run the risk of marring a prospect which, for grandeur and magnificence, has certainly no parallel in all the vast and inexhaustible treasures of nature. This splendid spectacle, however, we were not long destined to enjoy; a rapid descent, which shortly after

* The time referred to here and elsewhere throughout this narrative, is that of Greenwich. Upon the completion of the voyage, a difference, amounting to about thirty-four minutes, was found to exist between the times indicated at its two extremes; the chronometers of Weilberg being so much in advance of those of London. This difference was occasioned by the easterly direction of our course, and the difference in latitude to the extent of eight degrees, twenty minutes between the two places.

ensued, for a while concealed it from our view, and once more consigned us to the shades of night, which still continued to reign unbroken throughout the lower region of the air. Again we rose within reach of this delightful prospect: and again did we lose sight of it amid the vapours and obscurity that accompanied our descent; nor was it till we had three times made the sun rise, and twice beheld it set, that we could fairly consider it established above the horizon, and daylight complete upon the plane of the earth beneath us. From this time forward all our observation was principally directed to the nature of the country, and its adaptation to the descent which we had now resolved to effect, the first fitting opportunity. To this step, the uncertainty in which we necessarily were, with respect to the exact position we occupied, owing to our ignorance of the *distance* we had come, especially determined us. For a long time past, the appearance of the country, so unlike any with which we were acquainted, had led us to entertain serious doubts as to whether we had not already passed the limits of that part of Europe where we might expect to find the accommodation and conveniences which our own comfort, and the safety of the balloon, imperatively demanded. This opinion, the large tracts of snow over which we had passed, during the latter part of the night, bearing a strong resemblance to all we had hitherto pictured to ourselves of the boundless plains of Poland, or the barren and inhospitable steppes of Russia, considerably tended to confirm; and as the region we were immediately approaching seemed to offer advantages which, under these circumstances, we could not always hope to command, we resolved not to lose the occasion it so opportunely appeared to have afforded us. As soon as we had come to this determination, all preparations were speedily commenced for the descent; the guide-rope was hauled in (an operation of much labour, owing to the bad construction and imperfect action of the windlass); the grapnel and cable lowered, and everything got ready, that we might be able to avail ourselves of the first and fittest opportunity that might occur. To this intent, likewise, we quitted our exalted station, and sought a more humble and appropriate level, along which we continued to range for some time, and to a considerable distance; the yet early hour of the day deterring us from completing the descent, in the fear of not obtaining that ready assistance from the inhabitants which it is always the main object of the aeronaut, if possible, to secure. As the mists of the night began to clear away from the surface of the soil, we were delighted to perceive a country intersected with roads, dotted with villages, and enlivened with all the signs of an abundant and industrious population. One or two towns, likewise, of superior pretensions, were distinctly to be seen, giving promise of accommodation and advantages which, in our present emergencies, and under our present convictions, were not to be neglected. Accordingly, having pitched upon the spot most proper for the purpose, the valve was opened, and we commenced our descent. The place so selected was a small grassy vale, of about a quarter of a mile in breadth, embosomed in hills, whose sides and summits were completely enveloped with trees. Beyond this, on the opposite side, lay another valley of the same description, the only one visible for many miles, where we could conveniently effect our landing; an endless succession of forest scenery completing the landscape in the direction in which we should have to proceed. Into the former of these we now precipitated our descent, with the design of alighting, if possible, in the centre, clear of the woods that enclosed it on all sides. In these hopes, we were, however, disappointed; the wind suddenly increasing as we approached the ground, so much accelerated the onward progress of the balloon, that before the grapnel could take effectual hold of the soil we had passed the middle of the valley, and sweeping rapidly over the ground, were borne close against the wooded declivity that flanked its eastern termination. To discharge a sufficiency of ballast to raise the balloon and carry her clear of the impending danger, was the natural remedy. An unexpected obstacle to this operation here again presented itself: the sand which forms the ballast, frozen during the night into a solid block of stone, refused to quit the bag in the proportion required; and no time remained to search for one more suited to the occasion. Not a moment, was, in fact, to be lost; the valley was passed, and the branches of the trees that covered the opposing precipice, were already within a few feet of the balloon; the grapnel continued to drag, and no chance appeared of arresting her progress onward. In this emergency one alternative alone remained, and the sack itself, with all its contents, to the amount of fifty-six pounds in weight, were consigned to the earth. In a moment, the balloon, lightened of so large portion of her burden, had sprung up above 1000 feet, and clearing the mountain at a bound, was soon in rapid progress to the realms above. To counteract the consequence of this sudden accession of power, and avoid being carried beyond the reach of the second valley, which we have already described as the only other available spot for our descent, the valve was again opened, and issue given to a large quantity of gas, sufficient, as was calculated, to check the course of the balloon in time to enable us to attain the point to which all our views were now directed. A second time, however, were we doomed to be disappointed. No sooner had we completed this manœuvre, than by another caprice of nature, the wind suddenly abating, we found ourselves at once becalmed, and rapidly descending into the bosom of the woods that capped the summit, and clothed the sides of the intervening eminences. From this dilemma we were only relieved by the timely discharge of a further portion of our weight; not, however, before the ac-

celerated descent of the balloon had brought us within a cable's length of the ground (about 120 feet), and almost in contact with the upper surface of the wood. Here, for a few moments, we continued to hover; the grapnel struggling with the topmost branches of the trees, and grasping and relinquishing its hold according to the varying impulse of the slight wind that prevailed at our elevation. While in this situation, we perceived, standing in the path of the wood, two females, the first inhabitants we had noticed, lost in astonishment, and absolutely petrified with gazing upon so astounding an apparition. It was in vain we addressed them with a speaking-trumpet, in the hopes of procuring the assistance of some of the male population, which we conjectured could not be far off; the sound of our voices, proceeding from such an altitude, and invested with such an unearthly character, only augmented their astonishment and added to their fears: they fled incontinently, and without waiting farther parley sought the shelter of the neighbouring coverts. After continuing for a few minutes longer in these straits, we at length reached the confines of the wood, when, resolving not to be again baffled in our designs by the treacherous inconstancy of the wind, the valve was opened to its fullest dimensions, and the grapnel taking hold shortly after, we came to the ground with considerable, though by no means disagreeable rapidity. As soon as the descent was completed, and the power of the balloon sufficiently crippled to permit one of the party to quit the car, the inhabitants who had hitherto stood aloof, regarding our manœuvres from behind the trees, began to flock in from all quarters, eyeing at first, our movements with considerable suspicion, and not seldom looking up in the direction from which we had just alighted, in the expectation, no doubt, of witnessing a repetition of this, to them, inexplicable phenomenon. A few words in German, however, served to dissipate their fears and secure their services; when, as if eager by present assiduity to make amends for former backwardness, they absolutely seemed to contend with each other in their exertions to afford us assistance, and execute our several behests. To this kindly feeling we endeavoured to contribute by every means in our power. Our stock of biscuits, wine, and brandy, quickly disappeared, with a relish which the novelty of the journey they had so lately performed, tended, no doubt, considerably to augment. The brandy, in particular, so much stronger than any they had ever before essayed, attracted their special admiration; and as they each in succession drank off their allowance, seemed by the exclamation of "Himmlischer Schnapps" (celestial dram), which accompanied every draught, as well as by the upward direction of their eyes, to denote the quarter from which they now became fully convinced, a beverage so delicious could alone have proceeded. From them we now also learned where it was that we really had alighted, and, for the first time, became aware that we were in the Grand Duchy of Nassau, and about two leagues from the town of Weilburg, the nearest where we could expect to meet with the accommodation which the circumstances of the case rendered desirable. Thither, therefore, we determined to proceed, and having procured a cart and horses for the transportation of the balloon, we quitted this, to us, ever memorable spot, and attended by an amazing concourse of persons of every rank, age, and sex, set out for Weilburg, which a few hours enabled us to attain. The fame of our adventure had, however, already preceded us. On our approach we found ourselves greeted with acclamations, and a ready welcome and honourable attentions awaited our arrival. All the resources of the town were immediately placed at our disposal; the use of the archducal manège was tendered for the occupation of the balloon; and sentries, more indeed as a guard of honour than protection, stationed at the doors and avenues leading to the place of its reception. * * Thus ended an expedition which, whether we regard the extent of country it passed over, the time wherein it was performed, or the result of the experiment for the sake of which it was undertaken, may fairly claim to be considered among the most interesting and important which have hitherto proceeded from the same source. Starting from London and traversing the sea, which mere accident alone prevented from forming a more important feature in our route, in the short space of eighteen hours we performed a voyage which, including only those deviations we have since been enabled to ascertain, rather exceeds than falls short of an extent of five hundred British miles!" The following remark is well worthy of notice, inasmuch as it goes to contradict a generally received opinion:—"We frequently rose to an elevation of about twelve thousand feet—occasionally higher. At no time, however, did we experience the *slightest* effect upon our bodies, proceeding from the diminished pressure of the atmosphere. Nor, from what my own observations, and still more those of Mr. Green (whose experience in such matters far outweighs that of all the aeronautical world together), would lead me to assert, do I believe that any such effects as are currently attributed to this diminished pressure, have any existence at all; at least, at any elevation to which any person has hitherto been enabled to arrive."

PNEUMATOL'OGY, the doctrine of the properties of elastic fluids, or of spiritual substances.

PNEUMO'NIA, in medicine, inflammation of the lungs; a genus of disease in the class *Pyrexiæ*, and order *Phlegmasiæ*, of Cullen, characterized by difficult respiration, cough, and a sense of weight and pain in the thorax.

PNEUMON'ICS, medicines proper in diseases of the lungs, in which respiration is affected.

PO'A, in botany, a genus of plants, class

3 *Triandria*, order 2 *Digynia*. The species are mostly perennials, and consist of various kinds of meadow-grass.

POD, the pericarp, capsule, or seed-vessel of certain plants. It is a word in popular use, but never scientifically applied.

PODA'GRA, in medicine, that species of gout which recurs at regular intervals, attacking the joints of the foot, particularly the great toe, the pain of which is described as resembling that produced by laying a burning coal upon the toe. When the disease is violent, the whole foot is so sensitive, that the slightest pressure, the lightest touch, or even the agitation occasioned by a strong draught of air, causes excruciating pain. The attacks usually recur once a-year, in spring or autumn, sometimes twice, and even oftener.

PO'ET, one who has a particular genius for metrical composition, combined with those higher requisites which belong to a lively imagination, and a keen sense of the beauties of nature. Many write verses who have no just claim to the title of *poets*, and yet such writers may be many degrees beyond those versifying scribes who, in derision, are termed *poetasters*.

POET'ICAL JUSTICE, a term often used in speaking of dramatic writings, to denote a distribution of rewards and punishments to the several characters at the catastrophe or close of a piece.

PO'ET LAU'REATE, the appellation given to a poet whose duty it is to compose birth-day odes, and other poems of rejoicing, for the monarch in whose service he is retained. The laureate's post in England is at present filled by Dr. Southey, and the services formerly required are dispensed with. The first mention of a king's poet in England, under the title of poet laureate, occurs in the reign of Edward IV. *Poeta laureatus* was, however, also an academical title in England, conferred by the universities when the candidate received the degrees in grammar (which included rhetoric and versification). The last instance of a laureated degree at Oxford occurs in 1512. Ben Jonson was court poet to James I. and received a pension, but does not appear to have the title of laureate formally granted him. Dryden was appointed laureate to Charles II., and afterwards to James II., by regular patent under privy seal. Nahum Tate, Rowe, Eusden, Cibber, Whitehead, T. Warton, Pye, and Southey (the last of whom was appointed in 1813) have been Dryden's successors.

PO'ETRY, in its ordinary acceptation, is the art of expressing sentiments in measured language according to certain rules, harmony, and taste. It is divided into blank verse and rhyme, and denominated according to its subject; as pastoral for rural objects; elegiac for plaintive pieces; lyrical, or ballad; didactic, or instructive; satirical, or humorous; and dramatic, or conversational. But, agreeably with the extensive signification of its Greek origin (I create), poetry assuredly includes every effusion, every creation of the mind, whether expressed by the pen, the pencil, or the reed. In all cases, poetry has the same general character: that of an appeal to the passions, and an attempt to win over the hearer to the conceptions of the poet, whether those conceptions be just or otherwise. The *rules* of poetry and versifying are taught by art, and acquired by study; but this force and elevation of thought, which Horace calls something divine, and which alone makes the poetry of any value, must be derived from nature. In Dr. Channing's remarks on the character and writings of Milton, there are some splendid passages on the "art divine" which are so just and forcible, so full of energy and beauty, that we are glad to transcribe them for the reader, rather than attempt of ourselves to delineate "the language of the imagination and the passions." This admirable writer says, "In an intellectual nature, framed for progress and for higher modes of being, there must be creative energies, powers of original and ever-growing thought; and poetry is the form in which these energies are chiefly manifested. It is the glorious prerogative of this art that 'it makes all things new' for the gratification of a divine instinct. It indeed finds its elements in what it actually sees and experiences in the worlds of matter and mind; but it combines and blends these into new forms and according to new affinities; breaks down, if we may so say, the distinctions and bounds of nature; imparts to material objects life, and sentiment, and emotion, and invests the mind with the powers and splendours of the outward creation; describes the surrounding universe in the colours which the passions throw over it, and depicts the mind in those moments of repose or agitation, of tenderness or sublime emotion, which manifest its thirst for a more powerful and joyful existence. To a man of a literal and prosaic character, the mind may seem lawless in these workings; but it observes higher laws than it transgresses, the laws of the immortal intellect; it is trying and developing its best faculties; and in the objects which it describes, or in the emotions which it awakens, anticipates those states of progressive power, splendour, beauty, and happiness, for which it was created. We accordingly believe that poetry, far from injuring society, is one of the great instruments of its refinement and exaltation. It lifts the mind above ordinary life, gives it a respite from depressing cares, and awakens the consciousness of its affinity with what is pure and noble. In its legitimate and highest efforts it has the same tendency and aim with Christianity; that is, to spiritualize our nature. True, poetry has been made the instrument of vice, the pander of bad passions; but, when genius thus stoops, it dims its fires, and parts with much of its power; and, even when poetry is enslaved to licentiousness or misanthropy, she cannot wholly forget her true vocation. Strains of pure feeling, touches of tenderness, images of innocent happiness, sympathies with suffering virtue,

bursts of scorn or indignation at the hollowness of the world, passages true to our moral nature, often escape in an immoral work, and show us how hard it is for a gifted spirit to divorce itself wholly from what is good. Poetry has a natural alliance with our best affections. It delights in the beauty and sublimity of the outward creation and of the soul. It indeed pourtrays with terrible energy the excesses of the passions; but they are passions which show a mighty nature, which are full of power, which command awe, and excite a deep though shuddering sympathy. Its great tendency and purpose is, to carry the mind above and beyond the beaten, dusty, weary walks of ordinary life; to lift it into a purer element, and to breathe into it more profound and generous emotion. It reveals to us the loveliness of nature, brings back the freshness of youthful feeling, revives the relish of simple pleasures, keeps unquenched the enthusiasm which warmed the spring-time of our being, refines youthful love, strengthens our interest in human nature by vivid delineations of its tenderest and loftiest feelings, spreads our sympathies over all classes of society, knits us by new ties with universal being, and through the brightness of its prophetic visions, helps faith to lay hold on the future life. We are aware that it is objected to poetry, that it gives wrong views and excites false expectations of life, peoples the mind with shadows and illusions, and builds up imagination on the ruins of wisdom. That there is a wisdom against which poetry wars—the wisdom of the senses—which makes physical comfort and gratification the supreme good, and wealth the chief interest of life, we do not deny; nor do we deem it the least service which poetry renders to mankind, that it redeems them from the thraldom of this earthborn prudence. But, passing over this topic, we should observe that the complaint against poetry as abounding in illusion and deception is in the main groundless. In many poems there is more of truth than in many histories and philosophic theories. The fictions of genius are often the vehicles of the sublimest verities, and its flashes often open new regions of thought, and throw new light on the mysteries of our being. In poetry the letter is falsehood, but the spirit is often profoundest wisdom. And, if truth thus dwells in the boldest fictions of the poet, much more may it be expected in his delineations of life; for the present life, which is the first stage of the immortal mind, abounds in the materials of poetry, and it is the high office of the bard to detect this divine element among the grosser labours and pleasures of our earthly being. The present life is not wholly prosaic, precise, tame, and finite. To the gifted eye it abounds in the poetic. The affections which spread beyond ourselves and stretch far into futurity; the workings of mighty passions, which seem to arm the soul with an almost superhuman energy; the innocent and irrepressible joy of infancy; the bloom, and buoyancy, and dazzling hopes of youth; the throbbings of the heart, when it first wakes to love, and dreams of a happiness too vast for earth; woman, with her beauty, and grace, and gentleness, and fulness of feeling, and depth of affection, and her blushes of purity, and the tones and looks which only a mother's heart can inspire;—these are all poetical. It is not true that the poet paints a life which does not exist. He only extracts and concentrates, as it were, life's ethereal essence, arrests and condenses its volatile fragrance, brings together its scattered beauties, and prolongs its more refined but evanescent joys; and in this he does well; for it is good to feel that life is not wholly usurped by cares for subsistence and physical gratifications, but admits, in measures which may be indefinitely enlarged, sentiments and delights worthy of a higher being."

POINT, in geometry, as defined by Euclid, is a quantity which has no parts, or which is indivisible. Points are the ends or extremities of lines. If a point be supposed to be moved any way, it will, by its motion, describe a line.——*Point*, in astronomy, a term applied to a certain place marked in the heavens, or distinguished for its importance in astronomical calculations. The four grand points or divisions of the horizon, viz. the east, west, north, and south, are called the *cardinal points*. The zenith and nadir are the *vertical points*; the points where the orbits of the planets cut the plane of the ecliptic, are called the *nodes;* the points where the equator and ecliptic intersect are called the *equinoctial points;* that whence the sun ascends towards the north pole, is called the *vernal point;* and that by which he descends to the south pole, the *autumnal point*. The points of the ecliptic, where the sun's ascent above the equator, and descent below it, terminate, are called the *solstitial point*.——*Point*, in geography, a small cape or headland, jutting out into the sea: thus seamen say, two points of land are in one another, when they are so completely in a right line against each other, as that the innermost is hidden by the outermost.——*Point*, in optics, a term applied on several occasions to the rays of light: viz. the *point of dispersion*, wherein the rays begin to diverge: the *point of incidence*, that point upon the surface of a glass, or any body, on which a ray of light falls: *point of reflection*, the point from which a ray is reflected: *point of refraction*, that point in the refracting surface where the refraction is effected.——*Point*, among artists, an iron or steel instrument used for tracing designs on copper, wood, stone, &c. ——In modern music, a dot placed by a note to raise its value or prolong its time one-half, so as to make a semibreve equal to three minims; a minim equal to three quavers, &c.——*Point*, in poetry, a lively turn or expression that strikes with agreeable surprise; such as is usually found or expected at the close of an epigram.——In heraldry, *points* are the several different parts of the escutcheon, denoting the local positions of figures.——*Point-blank*, in gun-

IT WAS FORMERLY BELIEVED, THOUGH ERRONEOUSLY, THAT ALL POISONOUS MATTERS COULD BE THROWN OUT OF THE BODY BY PERSPIRATION.

nery, denotes the shot of a gun levelled horizontally. The *point-blank range* is the extent of the apparent right line of a ball discharged. In shooting point-blank, the ball is supposed to move directly to the object, without a curve.——*Points*, in grammar, certain characters used to mark the divisions of writing, or the pauses to be observed in reading or speaking; as the comma (,) semicolon (;) colon (:) and period (.) also the points of interrogation (?) and admiration (!)——*Pointing*, the art of dividing a discourse, by points, into periods and members of periods, in order to show the proper pauses to be made in reading. ——*Point of sight*, in perspective, a point on a plane marked out by a right line drawn from the perpendicular to the plane. ——The word *point* has various other significations. Thus we say "we have gained our *point*;" "he has reached the highest *point* of excellence;" "my friend is at the *point* of death;" "all *points* of dispute are given up," &c.

POINTER, among sportsmen, a dog used in finding partridges, pheasants, and other feathered game. Though the pointer is not a native of England, it has been long since naturalized here. Johnson, in his Shooter's Companion, observes, that from judicious crossing, by the fox-hound with the Spanish pointer, excellent dogs are to be met with in most parts of England. They differ from the setter, as when they have approached sufficiently near the game, they stand erect, whereas the true-bred setter will either sit upon his haunches, or lie close to the ground, generally the latter. Pointers are very susceptible of education; and their speed, strength, and persevering spirit, enable them to continue the chase for a length of time almost incredible.

POISON, a substance which by its chemical action, or re-action, when taken into the stomach, mixed with the blood, or applied to the flesh, disturbs or suspends the circulations and functions necessary to life. Some destroy the parts, as arsenic and corrosive sublimate; others destroy the elasticity of the stomach; others create decomposition by their active putrescence; and others affect the medullary system, as narcotics, and suspend the energy of the brain; but they act variously upon different animals.—When mineral poisons have been recently swallowed, a scruple or two of ipecacuanha will sometimes suffice as an emetic; but if this should not operate, twelve grains of white vitriol should be given to adults. Where narcotic poisons have been swallowed, as opium, henbane, hemlock, &c., the person must not, on any account, be allowed to sleep, but be obliged to drink plentifully of mucilaginous fluids, vinegar, strong coffee, &c. If arsenic, preparations of mercury, lead, &c. have been swallowed some time, and violent pain produced in the stomach, great anxiety, sickness, vomiting, griping, with a burning pain in the throat: in such cases a solution of soap in the proportion of one pound of soap to four pounds or pints of water should be drank pretty plentifully.—We may remark, by way of conclusion, that poisons are only deleterious in certain doses; for many of the most active, in small doses, form the most valuable medicines.

POLACRE, a vessel with three masts, used in the Mediterranean. The masts are usually of one piece, so that they have neither tops, caps, nor cross trees, nor horses to their upper yards.

POLARITY, that quality of a body in virtue of which peculiar properties reside in certain points; special direction, according to some governing law, as in magnetism, light, &c. A mineral is said to possess *polarity* when it attracts one pole of a magnetic needle and repels the other.

POLARIZATION OF LIGHT, in physics, a change produced upon light by the action of certain media, by which it exhibits the appearance of having *polarity*, or poles possessing different properties. The knowledge of this singular property of light has afforded an explanation of several intricate phenomena in optics.

POLE, in astronomy, the extremity of the axis of the earth, an imaginary point on the earth's surface, of which there are two, namely, the *Arctic* or North Pole, and the *Antarctic* or South Pole.——*Poles of the ecliptic*, are two points on the surface of the sphere, 23° 30′ distant from the poles of the world.——*Magnetic poles*, two points of a loadstone, corresponding to the poles of the world; the one pointing to the north, the other to the south.——*Pole*, in spherics, a point equally distant from every part of the circumference of a great circle of the sphere; it is a point of 90° distant from the plane of a circle, and in a line passing perpendicularly through the centre, called the axis. Thus the zenith and nadir are the *poles* of the horizon.

POLE-AXE, a kind of hatchet with a short handle, and a point or claw bending downward from the back of its head. It is principally used at sea, to cut away the rigging of the enemy attempting to board; sometimes it is thrust into the side of a ship to assist in boarding an enemy's ship, and called a *boarding-axe*.

POLECAT, in zoology, an animal of the genus *Mustela*, or weasel tribe, which emits a most fetid stench when pursued. It inhabits Europe and Asiatic Russia.

POLEMARCH, in antiquity, an Athenian magistrate whose duty it was to take care that the children of such as lost their lives in their country's service were maintained out of the public treasury. He had also the care of sojourners and strangers in Athens; his authority over them being equal to that of the archon over the citizens.

POLEMICS, controversial writings, particularly applied to controversies on matters of divinity.

POLEMOSCOPE, in optics, an oblique perspective glass, or *diagonal opera-glass*, contrived for seeing objects that do not lie directly before the eye. It consists of a concave glass, placed near a plane mirror in the end of a short round tube, and a

MOST POISONS OPERATE PRINCIPALLY BY A POWERFUL ACTION UPON THE NERVES, AND A RAPID DESTRUCTION OF THEIR ENERGY

convex glass in a hole in the side of the tube.

POLE-STAR, or POLAR STAR, in astronomy, a star of the second magnitude, the last in the tail of Ursa Minor, which is nearly vertical to the pole of the earth. Owing to its proximity, it never sets; it is therefore of great use to navigators in the northern hemisphere, in determining the latitudes, &c.

POLICE, the internal regulation of a kingdom, city, or town. In its most popular acceptation, the *police* signifies the administration of the municipal laws and regulations of a city or incorporated town or borough; as the *police* of London, of Birmingham, &c.——Those who are employed in thus administering to its peace and good government are termed *police-officers*.

POLICY, in commerce, a written instrument containing the terms or conditions on which a person or company undertakes to indemnify another person against losses of property exposed to peculiar hazards, as fire, losses by sea, &c. [See INSURANCE.]

POLITENESS, polished manners, or that conduct towards others which good will in the first place, and good sense in the second, imperiously dictates. It unites gracefulness and gentility of behaviour with an obliging willingness to conform to the wants and wishes of others.

POLITICAL ARITHMETIC, the art of making arithmetical calculations on matters relating to a nation, its revenues, value of lands and effects, produce of lands or manufactures, population, and the general statistics of a country.

POLITICAL ECONOMY, the science which treats of the administration of the revenues of a nation; or the management and regulation of its resources and productive property and labour. It is a term of very comprehensive meaning, and includes all the measures by which the property and labour of citizens are directed in the best manner to the success of individual industry and enterprise, and to the public prosperity.

POLITICS, in its most extensive sense, is the theory and practice of obtaining the ends of civil society; or the regulation and government of a nation or state, for the preservation of its safety, peace, and prosperity. Politics is necessarily divided into two branches; the one regarding a state in all its relations with other states, and the other its internal arrangements, or *polity*, and which includes what is frequently called its *domestic economy*, viz. the augmentation of its strength and resources, and the protection of its citizens in their rights, with the preservation and improvement of their morals.

POLL, in elections, the register of those who give their vote, containing their name, place of residence, &c. Also the place where the votes are registered; as "we are going to the *poll*;" "several electors were unable to get to the *poll*," &c.

POLLEN, in botany, the farina or the fructifying powder communicated by the anther of flowers on the pistil.

POLLENIN, in chemistry, a substance prepared from the pollen of tulips, highly inflammable, and insoluble in agents which dissolve other vegetable products. It is soon subject to putrefaction on being exposed to the air.

POLLUX, in astronomy, a fixed star of the second magnitude in the constellation Gemini, or the Twins.

POLONAISE, a robe or dress, sometimes worn by ladies, which is adopted from the fashion of the Poles.

POLONESE, the Polish language.

POLONOISE, in music, a movement of three crotchets in a bar, with the rythmical cesura on the last.

POLVERINE, in chemistry, the calcined ashes of a plant, of the nature of pearl-ashes, brought from the Levant and Syria. In the manufacture of glass it is preferred to other ashes, as the glass made with it is perfectly white.

POLY, a Greek prefix to many of our words, signifying *many*; as in *polygon*, a figure of many angles.

POLYACOUSTIC, an epithet applied to that which multiplies or magnifies sound.

POLYADELPHIA, in botany, the 18th class of the Linnæan system of plants; containing four orders, *pentandria, dodecandria, icosandria*, and *polyandria*, with the stamens united into three or more bodies by the filaments.

POLYANDRIA, in botany, the 13th class of the Linnæan system of plants; containing seven orders, *monogynia, digynia, trigynia, tetragynia, pentagynia, hexagynia*, and *polygynia*. The number of the stamens distinguishes this class from the first eleven classes; their situation on the receptacle separates it from the 12th class, *Icosandria*; and their distinctness from each other is the mark by which this class is known from the *Monadelphia* and the *Polyadelphia*.

POLYANTHUS, in botany, a plant of the genus *Primula*, or primrose, whose flower-stalks produce flowers in clusters.

POLYANTOGRAPHY, the act or practice of multiplying copies of one's own hand-writing, by engraving on stone; a species of lithography.

POLYCHROITE, in chemistry, the colouring matter of saffron.

POLYCOTYLEDON, in botany, a plant that has many cotyledons or lobes to the seed.

POLYGONUM, in botany, a genus of plants, class 8 *Octandria*, order 3 *Trigynia*. The species are shrubby perennials.

POLYGAMIA, the 23rd class of the Linnæan system of plants; containing three orders, *monoecia, dioecia*, and *trioecia*, with perfect flowers, accompanied with one or both sorts of imperfect flowers.

POLYGAMY, a plurality of wives or husbands at the same time. In some countries, as in Turkey for instance, polygamy is allowed; but by the laws of England, polygamy is made felony, except in

the case of absence beyond the seas for seven years. Polygamy prevailed among the Jewish patriarchs, both before and under the Mosaic law; but the state of manners had probably become reformed in this respect before the time of Christ, for in the New Testament we meet no trace of its practice. Polygamy has been allowed under all the religions which have prevailed in Asia. By the laws of Mohammed, every Mussulman is permitted to have a plurality of wives: the Arabs, however, seldom avail themselves of this privilege. The ancient Romans never practised it, though it was not forbidden among them; and Mark Antony is mentioned as the first who took the liberty of having two wives. From that time it became frequent in the Roman empire, till the reigns of Theodosius, Honorius, and Arcadius, who prohibited it A. D. 393.

POL'YGAR, in Hindostan, an inhabitant of the woods.

POLY"GENOUS, consisting of many kinds; an epithet used in mineralogy, as a *polygenous* mountain, one composed of strata of different species of stone.

POL'YGLOTT, a book containing many languages; as the Polyglott Bible, a bible printed in several languages.

POL'YGON, in geometry, a figure with many sides, or whose perimeter consists of more than four sides. Every polygon may be divided into as many triangles as the figure has sides, and may of course be easily measured.——*Polygonal numbers*, are so called because the units whereof they consist may be disposed in such a manner as to represent several regular polygons.

POLYG'ONUM, in botany, knotgrass, a genus of plants so named from the numerous joints in the stem.

POL'YGRAM, a figure consisting of many lines.

POL'YGRAPH, an instrument for multiplying copies of a writing with ease and expedition

POLYG'RAPHY, the art of writing in various ciphers, and deciphering the same.

POLYGYN'IA, in botany, one of the Linnæan orders, containing plants the flowers of which have many pistils.

POLYHAL'LITE, a mineral or salt occurring in masses of a fibrous structure, of a brick red colour, being tinged with iron. It contains sulphate of lime, of magnesia, potash and soda.

POLYHE'DRON, in geometry, a body or solid comprehended under many sides or planes.——In optics, a multiplying glass or lens consisting of several plane surfaces disposed in a convex form.

POLYM'ATHY, the knowledge of many arts and sciences. Hence a person who is acquainted with many branches of learning is styled a *polymath*.

POLYMIG'NITE, the name of a mineral recently found in Norway. It is black, brilliant, and crystalized in small prisms.

POL'YMORTH, in conchology, a name given by Soldani to a numerous series of shells, of a small and irregular form, which cannot be referred to any known genus.

POL'YNEME, in ichthyology, a fish having a scaly compressed head, with a blunt prominent nose, and folding appendages to the pectoral fins.

POLYNE'SIA, in geography, a term of modern invention, used to designate a great number of islands in the Pacific ocean, as the Sandwich, Friendly, and Society isles, the Carolines, Ladrones, &c.

POL'YNOME, in algebra, a quantity consisting of many terms.

POLYOP'TRUM, in optics, a glass through which objects appear multiplied.

POLYPET'ALOUS, in botany, having many petals.

POLYPH'ONY, or POLYPH'ONISM, multiplicity of sounds, as in the reverberation of an echo.

POLYPH'YLLOUS, in botany, many-leaved; as, a *polyphyllous* calyx or perianth.

POLYPO'DIUM, in botany, a genus of plants in the Linnæan system, class 24 *Cryptogamia*, order 2 *Filices*.

POLYP'ODY, in botany, a plant of the genus *Polypodium*, of the order of *Filices* or ferns. There are numerous species, of which the most remarkable is the common male fern.

POL'YPUS, or POL'YPE, a species of fresh-water insect belonging to the genus *Hydra*, and order of *Zoophytes*. It inhabits the stagnant waters of Europe, and is remarkable for the property that if cut into several parts, each part will shoot out a new head and tail, and thus become a perfect animal. The bodies of these animals appear only a homogeneous mass, constituted of a gelatinous and irritable cellular tissue, in which the vital fluids move in a slow and protracted course. The whole of this extensive class are provided with an internal cavity or stomach, and some of them with indistinct traces of hollow canals or ovaries. The body is usually of a cylindrical or conical form, of a gelatinous or transparent texture; the mouth is the only opening, and is surrounded with tentacula, varying in form and number. Numerous and more extraordinary facts than it is here possible to relate, respecting its multiplication by the division of its parts, and particularly the possibility of engrafting one polype upon another, belong to this animal. In the lowest races of polypi, the distinctive characters of animal life are so slightly developed, that there is much difficulty in distinguishing them from the cryptogamic families of the vegetable kingdom. The resemblance in these plants to animals consists in this, that from the egg is formed a bulb, which shoots up into a stem, and sends off branches; there is also a root, which, however, is merely the organ of attachment, affording no nourishment to the animals. Being thus immovably fixed to a particular spot, they have no other means of providing themselves with food, but by their long tentacula. Certain species of polype are usually found in ditches. Whoever will carefully examine these when the sun is very powerful, will

see many little transparent lumps, of the appearance of a jelly, and size of a pea, and flatted upon one side. The same kind of substances are likewise to be met with on the under sides of the leaves of plants which grow in such places. These are the polypes in a quiescent and apparently inanimate state. They are generally fixed by one end to some solid substance, with a large opening, which is the mouth, at the other; having several arms fixed round it, projecting as rays from the centre. In contemplating the structure of the polypi, we find their nutritive organs the simplest of all possible forms; consisting of a mere stomach adapted to receive and digest food, without any other apparent organ, being destitute of brain, nerves, or organs of sense; nor is there the slightest appearance of any thing corresponding to lungs, heart, or even vessels of any kind. The researches of Trembley have brought to light the extraordinary fact, that not only the internal surface of the polypus is endowed with the power of digesting food, but that the same property belongs also to the external surface, or what we might call the skin of the animal. He found that by a dexterous manipulation, the hydra may be completely turned inside out, like the finger of a glove, and that the animal, after having undergone this singular operation, will very soon resume all its ordinary functions, just as if nothing had happened. It accommodates itself in the course of a day or two to the transformation, and resumes all its natural habits, eagerly seizing animalcules with its tentacula, and introducing them into its newly-formed stomach, which has for its interior surface what before was the exterior skin, and which digests them with perfect ease.—Still more complicated are the forms and economy of the aggregated polypi, which prolific nature has spread in countless multitudes over the rocky shores of the whole globe. These grow in the form of plants, and are supported on one common stem, with widely extending flowering branches. These many-headed monsters present myriads of open mouths, each surrounded by single or numerous rows of tentacula, which are extended to catch their prey; these are provided with a multitude of cilia, which, by their incessant vibrations, determine currents of water to flow towards their mouths, carrying with them the floating animalcules on which the entire mass of polypi subsists.——The name given to the habitations of polypes, or to the common part of those compound animals, is *polypier*; and a fossil polype is called a *polypite*.——*Polypus*, in ichthyology, a sea-fish, resembling the cuttle-fish, so called because it has numerous feet.——*Polypus*, in surgery, a fleshy tumour, commonly met with in the nose, that abounds in ramifications, from which it derives its name.

POLYSPERM'OUS, in botany, an epithet for such plants as have more seeds than four succeeding each flower, without any certain order.

POLYSYL'LABLE, in grammar, a word consisting of more syllables than three; for when a word consists of one, two, or three syllables, it is called a monosyllable, dissyllable, and trisyllable.

POLYSYN'DETON, in grammar and rhetoric, a figure in which a redundance of conjunctions, especially copulative ones, is used; as, "we have armies and fleets and gold and stores—all the sinews of war."

POLYTECH'NIC, an epithet denoting or comprehending many arts; as, a *polytechnic school*; the *Polytechnic Gallery*.—The POLYTECHNIC SCHOOL, in France, was established by a decree of the national convention of March 11th, 1794, which was passed by the influence of Monge, Carnot, Fourcroy, &c. "The committee of public safety had seen the necessity of providing for the education of engineers. The school was first called *ecole centrale des travaux publics*, which name was changed a year after. Men like Lagrange, Laplace, Berthollet, Fourcroy, and many other distinguished individuals, were its professors. It is now established in the buildings of the ancient college of Navarre. Napoleon did much for it, and under him it received considerable modifications. The pupils were obliged to live in the building, and wear a uniform. Its object is to diffuse a knowledge of the mathematical, physical, and chemical sciences, and to prepare the pupils for the artillery service and the various departments of engineering, military, naval, and civil. The number of pupils is limited to 300. The terms for the students not supported on the foundation are 1000 francs a year, independent of the expense of uniform and books. The pupil, at the time of admission, must be more than sixteen and less than twenty years old. The course of studies lasts two years, in certain cases three. A rigorous examination precedes admission, and another examination takes place before the pupils leave the institution, and it is invariably attended by the greater number of the marshals of France, together with many of the most distinguished scholars; 'and,' says an English writer, 'the replies of the pupils might well astonish a senior wrangler of Cambridge, or a medallist of Dublin!' The origin of this establishment, and the high character of the course of instruction, has always inspired the students with a warm love of their country. March 30th, 1814, they fought bravely against the allies. In April, 1816, the school was abolished, the students appearing not sufficiently devoted to the Bourbons, who, however, were obliged to re-establish it in September of the same year. In the revolution of July, 1830, the students immediately took part with the people, and were of the greatest use, as well by their military knowledge as by their heroic enthusiasm; and several of the most important attacks during those memorable days were conducted by these youths."

POLYTH'EISM, the doctrine and worship of a plurality of gods: opposed to *monotheism*, or the belief in one Supreme Being.

THE POPE IS STYLED "HIS HOLINESS," "THE HOLY FATHER," AND SOMETIMES IN HISTORY "THE SOVEREIGN PONTIFF."

POMA'CEÆ, the 36th Linnæan natural order of plants, having an esculent pulpy root; as the apple, &c.

POMA'TUM, a compound of lard and rose-water, an unguent used in dressing the hair.

PO'MEGRANATE, in botany, the fruit of a tree belonging to the genus *punica*. It is as large as an orange, of a reddish colour, having a hard rind filled with a soft pulp and numerous seeds.

POMŒ'RIUM, in antiquity, a space of ground both within and without the walls, which the augurs consecrated on the first building of any city.

POMIF'EROUS, apple-bearing; an epithet applied to plants which bear the larger kinds of fruits, such as melons, gourds, &c. in distinction from the *bacciferous* or berry-bearing plants.

POMOL'OGY, that branch of gardening which is directed principally to the cultivation of fruit-trees, shrubs, &c. In Germany and France there exist many pomological societies, upon a similar principle to our horticultural societies, though the former, as the name implies, direct their attention chiefly to the cultivation of fruits.

POM'PA CIRCEN'SIS, or CEREA'LIS, in antiquity, a procession exhibited at the *Ludi Cereales* of the Romans, consisting of a solemn march of the persons who were to engage in the exercises of the circus, attended by the magistrates and ladies of quality; the statues of the gods and illustrious men being carried along in state on waggons called *thensæ*.

POM'PHOLYX, in chemistry, the white oxyde which sublimes during the combustion of zinc; called *flowers of zinc*.

PO'MUM ADAMI, or ADAM'S APPLE, in anatomy, the name of a protuberance in the anterior part of the neck, so named from the whimsical supposition that a part of the forbidden fruit of which Adam ate stuck in his throat, and thus caused the protuberance.

PON'GO, in zoology, a name applied by Cuvier to the largest species of ape known, which inhabits Borneo, and resembles the orang-outang in its general form and erect position, but has the cheek-pouches and lengthened muzzle of the baboon.

PONTEE', in glass-works, an iron instrument used to stick in the glass at the bottom, for more conveniently fashioning the neck of it.

PON'TIFEX, among the Romans, was one of the order of Pontifices, who had the superintendance and direction of divine worship in general. The Pontifices were erected into a college consisting of fifteen persons, of whom the eight first had the title of *Majores*, and the seven others of *Pontifices Minores*. They made together but one body, the chief of which was called *Pontifex Maximus*.

PON'TIFF, the high or chief priest in the Romish and Greek churches. The ancient Romans had a college of *pontiffs*; the Jews had their *pontiffs*; and the pope is called a *sovereign pontiff*.——The word *pontificate* is used for the state or dignity of a pontiff, or high priest; but more particularly for the reign of a pope.

PONTIFICA'LIA, the robes in which a bishop performs divine service.

PONTOON'S, or PONTOON BRIDGE, a floating bridge, formed of flat-bottomed boats, anchored or made fast in two lines, and used in forming bridges over rivers for the passage of armies.——*Pontoon carriage*, a vehicle formed of two wheels only, and two long side pieces, whose fore-ends are supported by timbers.

PONT-VOLANT', in military affairs, a kind of bridge used in sieges for surprising a post or outwork that has but narrow moats. It is composed of two small bridges laid one above the other, and so contrived that, by the aid of cords and pullies, the upper one may be pushed forward till it reaches the destined point.

POOR, POOR LAWS. [See PAUPERISM.]

PO'PÆ, in Roman antiquity, certain officers of inferior rank who assisted the priests at sacrifices.

POPE (*papa*, father), the head of the Roman Catholic church. The appellation of *pope* was anciently given to all Christian bishops; but about the latter end of the eleventh century, in the pontificate of Gregory VII. it was usurped by the bishop of Rome, whose peculiar title it has ever since continued. The spiritual monarchy of Rome sprung up soon after the declension of the Roman empire. The bishops of Rome affect to owe their origin to the appointment of St. Peter, who was considered as transferring the keys of heaven (figuratively consigned to his keeping), to these bishops as his successors; hence they assumed a supremacy which was admitted by all the Western Christians, but resisted by the Eastern ones, who in Greece, Turkey, and Russia, have a separate Greek church. The vices of the clergy led, however, in the 14th and 15th centuries, to schisms; and a personal quarrel between the pope and Henry VIII. induced the latter to assume the title of the Head of the Anglican Church, as well as to recognize the principles of the Reformers, which were adopted by many German princes, and the Northern sovereigns. The pope retains his spiritual ascendancy throughout Italy, France, Austria, Spain, and Portugal; and four-fifths of the Irish are Catholics. He is also regarded as a sovereign in certain provinces contiguous to Rome.

POP'LAR, in botany, a tree of the genus *Populus*, of which there are eleven species. 1. The abele; 2. the white poplar; 3. the black poplar; 4. the aspen-tree, or trembling poplar; 5. the balsamifera, or Carolina poplar; 6. the tacamahaca of Canada, &c. The wood of the abele, in particular, is recommended for flooring. Of the black poplar, the inner bark is used in Kamschatka for bread; and the cottony down of the seeds has been made into paper. The resin of the tacamahaca is employed in

THE OPPOSITE CLASSES OF RICH AND POOR PROVE, THAT FOR ALL ORTENTATION EXPENDITURE, THERE MUST BE EQUIVALENT PRIVATION.

medicine. The Lombardy poplar yields a dye of as fine a lustre, and equally durable, as that of the finest yellow wood, and its colour is more easily extracted.

POP'LIN, in commerce, a kind of fine-woven stuff made of silk and worsted.

POP'PY, in botany, a plant of the genus *Papaver*, of several species, from one of which, the *somniferum*, or white poppy, opium is collected. [See OPIUM.]

POP'ULAR, enjoying the favour of the great body of the people; as, a *popular* ministry. Also, whatever pertains to the common people; as the *popular* voice.—— In law, a *popular* action is one which gives a penalty to the person that sues for the same.

POPULA'RES, the name of a party at Rome, who struggled to ingratiate themselves with the people, and, by extending *their* influence and power, to increase their own. The *Populares* were opposed to the *Optimates*. [See OPTIMATES.]

POPULARITY, the state of possessing the affections and confidence of the people in general. "The man whose ruling principle is duty, is never perplexed with anxious corroding calculations of interest and *popularity*."

POPULA'TION, the aggregate number of people in any country. Owing to the increase of births above that of the deaths, the population is continually increasing in most parts of the habitable world. "Countries," says Adam Smith, in his Wealth of Nations, "are populous, not in proportion to the number of people whom their produce can clothe and lodge, but in proportion to that of those whom it can feed."——The following Table gives, at a glance, the

POPULATION of ENGLAND and WALES, from the Year 1700 to 1831.

Year.	No. of Persons.	Year.	No. of Persons.
1700	5,475,000	1770	7,428,000
1710	5,240,000	1780	7,953,000
1720	5,565,000	1790	8,675,000
1730	5,796,000	1801	9,168,000
1740	6,064,000	1811	10,502,500
1750	6,467,000	1821	12,218,500
1760	6,736,000	1831	14,594,500

GENERAL SUMMARY, 1831.

England	13,089,336
Wales	805,236
Scotland	2,365,807
Army and Navy	277,017
Total	16,537,396

SCOTLAND.

Years	1801	1811	1821	1831
Number of Persons	1,652,400	1,865,900	2,135,300	2,365,807

No. of Persons.

Edinburgh, City of, in 1831	162,403

IRELAND.

Years	1821	1831
Number of Persons	6,846,949	7,767,401

THE METROPOLIS.

POPULATION IN THE YEARS	1700	1750	1801	1811	1821	1831
City of London Within the Walls	139,300	87,000	78,000	57,700	58,400	57,695
City of London Without the Walls	69,000	57,300	56,300	68,000	72,000	67,878
City and Liberties of Westminster	130,000	152,000	165,000	168,600	189,400	202,080
Parishes within the Bills of Mortal.	326,900	357,600	477,700	593,700	730,700	852,849
Ditto not within the Bills of Mortal.	9,150	22,350	123,000	162,000	224,300	293,567
Total	674,350	676,250	900,000	1,050,000	1,274,800	1,474,069

Increase per cent. of the Population at periods between 1700 and 1831:—

Between 1801 & 1811	14 per cent.	Between 1821 & 1831	14 per cent.
1811 & 1821	17¾ ——	1700 & 1831	135 ——

But the increase of the 40 counties of England, taken together since 1700, has been 154 per cent.; that of the 12 counties of Wales only 117 per cent. during the same period.

POR'CELAIN, a fine sort of earthen-ware, originally manufactured in China, and thence called *china-ware*. The combination of silex and argil is the basis of porcelain; and, with the addition of various proportions of other earths, and even of some metallic oxydes, forms the different varieties of pottery, from the finest porcelain to the coarsest earthen-ware. Though siliceous earth is the ingredient which is present in large proportion in these compounds, yet it is the argillaceous which more particularly gives them their character, as it communicates ductility to the mixture when soft, and renders it capable of being turned into any shape on the lathe, and of being baked. *Porcelains* differ much in their fineness and beauty. Under the head "CHINA-WARE," and again in the article "EARTHEN-WARE," we have given somewhat detailed accounts of the materials and modes of manufacturing them. We will here add a description of the manufacture of the *Worcester porcelain*:—The siliceous and other substances are first pulverized by an iron roller which weighs upwards of two tons, and revolves in a groove not unlike that of a cider-mill; after this they are calcined, and then ground at the water-mill, sufficiently fine to filter through sieves, through which no particle of greater dimensions than the

THE LIBERAL REWARD OF LABOUR NATURALLY TENDS TO WIDEN AND INCREASE THE POPULATION OF ANY COUNTRY.

57,000th part of an inch can pass. The composition then, in its liquid state, is dried upon the slip-kilns till it becomes of the consistency of clay, when it is taken to the throwing-room, where the ware is first formed; and from thence to the store-room, in which it is placed to dry gradually, thus preparing it for turning and pressing. The articles being applied to the latter, are diminished in thickness about one-half; the ware is then put into the first set of kilns, called "biscuit kilns," in which it is burned nearly sixty hours. Having passed through these kilns, such pieces as have been warped by too great heat, are reburned in the second. After this the articles are prepared for receiving their glazing, which accomplished, they are a third time committed to the fire,—and when the glaze is sufficiently vitrified they are taken out, and when cool receive their finest embellishment in the painting-room; they are then a fourth time condemned to the furnace, for the purpose of incorporating the gilding and the colours with the glaze, after which they are burnished for the market.

POR'CELAIN-SHELL, in ichthyology, a genus of shell-fish, with a simple shell without any hinge, formed of one piece, and of a gibbous figure on the back: the mouth is long, narrow, and dentated on each side; and the animal inhabitant is a limax.

POR'CELLANITE, a species of jasper, a siliceous mineral of various colours. It is sometimes marked with vegetable impressions of a brick red colour, and seems to be formed accidentally in coal mines which have indurated and semi-vitrified beds of coal-shale or slate-clay.

PORCH, in architecture, a kind of vestibule supported by columns at the entrance of temples, halls, churches, or other buildings.—By way of distinction, a public portico in Athens, where Zeno the philosopher taught his disciples, was called *the porch*. Hence, *the porch*, in classical literature, is equivalent to the *school of the Stoics*.

POR'CUPINE *(histrix)*, in zoology, a very singular genus of quadrupeds, belonging to the order of the *glires*. The fore-teeth of the porcupine are obliquely truncated, and it has no canine teeth: its ears are of a roundish form, and the body is covered with prickles or spines, and also with bristles like those of a hog. The spines or quills, as they are called, are of two kinds; some being short, thick, strong, and sharp-pointed; others longer, weaker, more flexible, and compressed at the point. These the porcupine is capable of erecting if attacked or in danger; but not of projecting, as is sometimes stated.

POR'CUPINE-FISH, in ichthyology, a fish about fourteen inches long, covered with spines and prickles.

PORE, in anatomy, a small aperture in the skin for perspiration, so fine as to be invisible except by microscopes of great power, and so numerous that thousands of them exist in a small circle. Also, a small spiracle or opening in other substances; as the *pores* in plants.

PO'RISM, a name given by ancient geometers to certain propositions, which partake both of the nature of a problem and a theorem. The *porism* asserts that a certain problem may become indeterminate, and so far it partakes of the nature of a theorem, and in seeking to discover the conditions by which this may be effected, it partakes of the nature of a problem.

POR'PHYRY, in mineralogy, a granular and crystalized mass, the composition and colours of which are various. In its homogeneous ground are disseminated a multitude of little angular and granuliform parts, giving to the whole a speckled appearance. It is very hard, and susceptible of a fine polish.

POR'PHYRY-SHELL, an animal or shell of the genus *Murex*, consisting of one spiral valve. It was from one species of this genus that the liquor producing the celebrated Tyrian purple was produced.

POR'PITE, or POR'PITES, in natural history, a small species of fossil coral of a roundish figure, flattened and striated from the centre of the circumference. It is found immersed in stone, and is known by the name of *hair-button-stone*.

POR'POISE, in ichthyology, a cetaceous fish of the genus *Delphinus*, with a blackish or brown back, thick towards the head, but more slender towards the tail, which is semi-lunar. This fish preys on other fish, and seeks food not only by swimming, but by rooting, like a hog, in the sand and mud.

PORT, a haven, cove, inlet, or recess of the sea; in short, any commodious place situated on the sea-coast, or at the mouth of a river, screened from the wind and the assaults of an enemy, with depth of water sufficient for ships of burden, and where vessels may safely unload their cargoes. The word *port* is generally applied to spacious harbours much resorted to by ships, as the *ports* of London and Liverpool; and they may be either natural or greatly assisted by art.——*Port*, a kind of wine made in Portugal; so called from *Oporto*.

PORTCUL'LIS, in fortification, a machine like a harrow, hung over the gate-way of a fortified town, to be let down in case of surprise, to prevent the entrance of an enemy.

PO'RTER, a kind of malt liquor made of high-dried malt, and characterized by its dark brown colour, its peculiar aromatic flavour, and its tonic and intoxicating qualities. Before the year 1730, the malt liquors in general use in London were ale, beer, and twopenny; and it was customary for the drinkers of malt liquor to call for a pint, or tankard of half-and-half, that is, a half of ale and a half of beer, a half of ale and half of twopenny, or half of beer and half of twopenny. In course of time, it also became the practice to call for a pint, or tankard, of *three threads*, meaning a third of ale, of beer, and of twopenny; and thus the publican had the trouble to go to three casks, and turn three cocks for a pint of

liquor. To avoid this inconvenience and waste, a liquor was made which should partake of the same united flavours of ale, beer, and twopenny, which was called *entire* or entire-butt; and as it was a very hearty and nourishing liquor, it was very suitable for *porters* and other working people: hence it obtained its present name. Some brewers colour their porter with burnt sugar; but in general they concentrate a quantity of their first and best wort to an extract, in an iron pan, and burn this into a *colouring stuff*, whereby they can lay claim to the merit of using nothing in their porter but malt and hops.

PO'RT-FIRE, a composition of saltpetre, sulphur, &c. for setting fire to powder, which is frequently used in preference to a match. It may be either used dry, or moistened with linseed oil.

PORTGLAIVE, one who formerly carried the sword before a prince or governor.

PO'RTGREVE, or PO'RTREEVE, in former times, the chief magistrate of a port or maritime town. This officer is now styled either mayor or bailiff. According to Camden, the chief magistrate of London was anciently called *portgreve*, but was exchanged by Richard I. for two bailiffs, and these gave place in the reign of John to a mayor.

PO'RTHOLES, the openings or embrasures in the sides of ships of war, through which guns are put.

PO'RTICO, in architecture, a kind of gallery on the ground, supported by columns, where people may walk under cover. Though this word is derived from *porta*, a gate or door, yet it is used for any arrangement of columns which form a gallery.——The Athenians were curious in their porticos, and the poets and philosophers recited their works, and held their disputations there. Their most famous portico was that called *Pœcile*, which was in fact a picture gallery, adorned with the works of the greatest masters.

PO'RTLAND STONE, a compact kind of sand-stone obtained in the isle of Portland, on the coast of Dorset. It is composed of a coarse grit cemented together by an earthy spar: it will not strike with steel, but makes a violent effervescence with nitric acid.

POSE', in heraldry, a lion, horse, or other beast standing still, with all his four feet on the ground.

POSID'IUM, or POSID'EON, in ancient chronology, the seventh month of the Athenian year; which consisted of thirty days, answered to the latter part of December and beginning of January, and had its name from a festival in honour of Neptune Posidonius which was during that month celebrated.

POSI''TION, in arithmetic, called also the *rule of false*, because in calculating on several false numbers as if they were true ones, from the differences found therein the number sought is found.——*Position*, in geometry, is a term sometimes used in contradistinction to magnitude: thus a line is said to be given in position, *positione data*, when its situation, bearing, or direction, with regard to some other line is given: on the contrary, a line is given in magnitude, when its length is given, but not its situation.——*Position*, in logic, the ground-work or proposition on which an argument is raised.——*Position*, in dancing, the manner of disposing the feet, with regard to each other.

POS'ITIVE, a term of relation sometimes opposed to *negative*; hence a positive quantity, in algebra, is a real or affirmative quantity, or a quantity greater than nothing.——*Positive quantities* are designated by the character + prefixed or supposed to be prefixed to them.——*Positive* is used in opposition to *relative* or arbitrary: thus, we say, beauty is no positive thing, but depends on different tastes. It is also used in opposition to *natural*: as, a thing is of *positive* right, meaning that it is founded on a law which depends absolutely on the authority of him who made it.——The word *positive* also means confident, or over-confident.——*Positive Degree*, in grammar, is the adjective in its simple signification, without comparison, or relation to increase or diminution; as, *good bad*, &c.——*Positive Electricity*, a term applied to bodies supposed to contain more than their natural quantity of electricity. *Positive* electricity being produced by rubbing glass, is called the *vitreous*; *negative* electricity, produced by rubbing amber or resin, is called the resinous.

POSOL'OGY, in medicine, the science or doctrine of preparing and administering doses.

POS'SE COMITA'TUS, in law, the armed power of the county, or the attendance of all persons charged by the sheriff to assist him in the suppression of riots, &c.

POSSES'SION, in law, the holding or occupying of any thing, either *de jure* or *de facto*. Possession *de jure*, is the title a man has to enjoy a thing, though it be usurped and in the actual possession of another; or where lands are descended to a person, and he has not yet entered into them: and possession *de facto*, or actual possession, is where there is an actual and effectual enjoyment of a thing. Long undisturbed possession is presumptive proof of right or property in the possessor.

POSSES'SIVE CASE, in English grammar, the genitive case, or case of nouns and pronouns, which either denotes ownership, as *John's* book (a book belonging to John); or some relation of one thing to another, as *Byron's* admirers (those who admire the writings of Byron).

POST, *after*, a Latin preposition used in composition with several English words, and generally implying a relation of posteriority.

POST, a messenger or carrier of letters; one that goes at stated times to convey the mail and dispatches.——A military station; as, the troops are ordered to defend the *post*.——A public office or employment.——The name of a sort of writing paper, much used for letters.——*To ride post*, to be employed to carry dispatches and papers, and

THE ISLE OF PORTLAND CONSISTS OF ONE CONTINUED MASS OF FREESTONE, AND THE ROCKS FORM A BARRIER ROUND THE ISLAND.

THE EARLY STATUTES FOR THE PROTECTION OF LETTERS, BEFORE MAIL-COACHES WERE INVENTED, STILL APPLY TO THOSE ROADS WHERE THERE ARE NONE.

consequently to ride with speed.——Hence *to travel post*, is to travel expeditiously by the aid of fresh horses taken at certain stations.——*To post*, in book-keeping, to carry accounts from the waste-book or journal to the ledger.

PO'STAGE, the duty or charge imposed on letters or parcels conveyed by post. As this charge is now only *one penny* for each letter not exceeding half an ounce in weight, whether conveyed one mile or one hundred, the penny-postage promoters have doubtless earned the lasting gratitude of a numerous class of her majesty's subjects. Some persons, indeed, may imagine that the 10 per cent. which has been added to their assessed taxes detracts a little from the boon; but there are others who, like Cruikshank's aristocratic footmen, "don't know what taxes *is*!" and to such it must be a source of unmixed delight.

POST-DATE, to date after the real time; as to *post-date* a bill or a contract, that is, to date it after the true time of drawing the one or making the other.

POST-DILU'VIAN, a person who lived after the flood, or who has lived since that event.

POST-DISSE'IZIN, in law, a writ intended to put in possession a person who has been disseized after a judgment to recover the same lands of the same person, under the statute of Merton.

POS'TEA, in law, is the return of a record of the proceedings in a cause after a trial and verdict by writ of *nisi prius*, into the court of common pleas, after a verdict; and there afterwards recorded.

PO'STERN, in fortification, a small gate, usually in the angle of a flank of a bastion, or in that of the curtain or near the orillon, descending into the ditch.

POSTHU'MOUS, born after the death of a father. Also, published after the death of the author; as *posthumous works*.

POS'TIL, a marginal note; originally, a note in the margin of the Bible, so called because written after the text.

POSTLIMIN'IUM, or POSTLIM'INY, among the Romans, was the return of a person to his own country who had gone to sojourn in a foreign country, or who had been banished or taken by an enemy.—— In the modern law of nations, the right of *postliminy* is that by virtue of which, persons and things taken by an enemy in war, are restored to their former state, when coming again under the power of the nation to which they belonged. But this cannot extend in all cases to personal effects, on account of the difficulty of ascertaining their identity.

PO'STMASTER, the officer who has the superintendence and direction of a post-office.——The *postmaster-general* is the chief officer of the post-office department, whose duty is to make contracts for the conveyance of the public mails and see that they are executed, and who receives and is accountable for the moneys arising from the postage of letters, pays the expenses, and superintends the whole.

PO'ST-NOTE, in commerce, a bank note intended to be transmitted to a distant place by the public mail, and made payable to *order*; differing in this from a common bank note, which is payable to the *bearer*.

PO'ST-OFFICE, an establishment for the reception, conveyance, and delivery of letters, &c. Posts were originally intended to serve merely for the conveyance of public dispatches, and of persons travelling by authority of government. But the great convenience it afforded to individuals, particularly as commercial transactions multiplied and extended, to have a safe, regular, and speedy communication between distant parts of the country, induced the government to convert it into a source (and a most unexceptionable source, as it always appeared to us) of public revenue. In 1635 Charles I. erected a letter-office for England and Scotland; but this extended only to a few of the principal roads, the times of carriage were uncertain, and the postmasters on each road were required to furnish horses for the conveyance of the letters at 2½*d.* a mile. The plan did not eventually succeed; but it led to an establishment for the conveyance of letters to all parts of the kingdom, weekly. This was in 1649, under the commonwealth. In 1657, the post-office was established, more after the footing it lately bore, and the rates of postage that were then fixed were continued till the reign of queen Anne. But instead of improving, the post gradually became less expeditious; and in 1784, when a journey from London to Bath was made by the diligences in 17 hours, the post took 40 hours! and on other roads the rate of travelling bore about the same proportion. Under these circumstances, it occurred to Mr. John Palmer, of Bath, comptroller-general of the post-office, that a very great improvement might be made in the conveyance of letters, in respect of economy, as well as of speed and safety, by contracting with the proprietors of the coaches for the carriage of the mail; the latter being bound to perform the journey in a specified time, and take a guard with the mail for its protection. That this plan has worked well, and proved highly beneficial both to the public and the government, every one must admit; and though a snug corner in the mail, once so desirable, must now give way to a place in the rapid railway "train," we are bound to regard it as an old friend who has served us on many an important occasion. The Post Office Act (1839), which recognizes the expediency of one uniform postage of One Penny, for all Inland Letters within a certain weight, and without reference to the several distances of their delivery, is now in operation; but in delegating its powers of execution to the Lords of the Treasury, "My Lords" are empowered to alter, fix, reduce, or remit the rate of postage at any time; and also, from time to time, to appoint whether the postage shall be paid by the sender or by the receiver, or either way, at the option of the sender. The experiment is thus open at all times to revisal. Newspapers go free in

FOREIGN LETTERS SUSPECTED TO CONTAIN PROHIBITED GOODS MAY BE OPENED IN THE PRESENCE OF A JUSTICE, OR MAGISTRATE OF THE DISTRICT.

Great Britain through the General post; they must be open at each end; any writing or inclosure subjects them to a treble postage. To the British colonies they also go free, if put into a post-office within seven days of publication. To the Continent, where English papers are received free, those printed in their language are also free here. The West India and America Packet is made up the 15th day of every month, and the Leeward Island Packet the third Wednesday in every month. Those for France daily, except Sunday, and for other parts of Europe every Tuesday and Friday.

POʹSTSCRIPT, an addition made to a letter after it is concluded and signed by the writer. Also, any addition made to a literary performance after it had been supposed to be finished, containing something omitted or something new occurring to the writer.

POSʹTULATES, fundamental principles in any art or science, which are too easy and self-evident to need demonstration.

POTARʹGO, a kind of pickle imported from the West Indies.

POTʹASH *(potassa)*, in chemistry, the popular name of vegetable fixed alkali in an unrefined state, procured from the ashes of certain plants by lixiviation and evaporation. The matter remaining after evaporation is refined in a crucible or furnace, and the extractive substance burnt off or dissipated. Refined potash is called *pearlash*.

POTASʹSIUM, in chemistry, a substance procured by passing a galvanic charge through vegetable alkali, of which it is the metallic basis. Potassium has the most powerful affinity for oxygen of all substances known; it takes it from every other compound, and hence is a most important agent in chemical analysis.

POTATO, a productive, wholesome, and nutritive root of the genus *Solanum;* a native of America. It is the principal food of the poor in some countries, and has proved one of the greatest blessings bestowed on man. It was introduced into the British dominions by Sir Walter Raleigh in the 16th century; but it came slowly into use, and even at this day is by no means esteemed in some countries of Europe so much as it deserves.——*Potato brandy:* "Several physicians have already pointed out the deleterious effects of potato brandy: but as the researches of chemists could not find any injurious principle in the rectified spirit, no attention was paid to this opinion. M. Krauss, of Dusseldorff, imagines that he has found out the difference between spirit of wine and spirit of potatoes, but he deems it much more important first to show that not only is the rectification of the latter spirit too often carelessly conducted, but the spirit itself is made from potatoes which are either rotten, or which have begun to germinate. Its effects upon the human frame he describes as dreadful; producing delirium tremens, idiocy, &c."

POTENʹTIAL, having power to impress on us the ideas of certain qualities, though the qualities are not inherent in the thing; as *potential* heat or cold.——*Potential mood*, in grammar, is that form of the verb which is used to express the power, possibility, liberty, or necessity of an action or of being; as, I *may* go, he *can* sing.

POTʹSTONE, in mineralogy, a kind of indurated black talc, passing into serpentine. It is of a greenish gray colour, and occurs massive, or in granular concretions.

POTʹTERN ORE, in mineralogy, a species of ore which, from its aptness to vitrify like the glazing of potter's ware, the miners call by this name.

POTʹTERY, the manufacture of earthen pots, or earthenware in general, but particularly of the coarser sorts. The better kinds of pottery, called in this country *Staffordshire ware*, are made of an artificial mixture of alumina and silica; the former obtained in the form of a fine clay from Devonshire chiefly; and the latter consisting of chert or flint, which is heated red-hot, quenched in water, and then sifted to powder. Each material, carefully powdered and sifted, is diffused through water mixed by measure, and brought to a due consistency by evaporation; it is then highly plastic, and formed upon the potters' wheel or lathe into various circular vessels, or moulded into other forms, which, after having been dried in a warm room, are enclosed in baked clay vessels, resembling bandboxes, and called *seggars;* these are ranged in the kiln so as nearly to fill it, leaving only space enough for the fuel; here the ware is kept red-hot for a considerable time, and thus brought to the state of *biscuit*. This is afterwards *glazed*, which is done by dipping the biscuit-ware into a tub containing a mixture of about 60 parts of litharge, 10 of clay, and 20 of ground flint, diffused in water to a creamy consistence, and when taken out enough adheres to the piece to give an uniform glazing when again heated. The pieces are then again packed up in the seggars, with small bits of pottery interposed between each and fixed in a kiln as before. The glazing mixture fuses at a very moderate heat, and gives an uniform glossy coating, which finishes the process when it is intended for common white ware. [See Earthenware.]

POUNCE, gum-sandarach pulverized, a fine powder used to prevent ink from spreading on paper. There is also a kind of *pounce*, used by embroiderers and lacemakers, which is made of charcoal dust, and enclosed in muslin, &c. to be passed over holes pricked in the work, to mark the lines or designs on a paper underneath.——*Pounces*, in falconry, the talons or claws of a bird of a prey.

POUND, a weight containing 12 ounces troy, and 16 avoirdupois weight. It also denotes a money of account; so called because the ancient pound of silver weighed a pound troy.——*Pound*, any enclosed place, erected by authority, in which cattle are confined when taken in trespassing, or going at large, in violation of law. A common pound is kept in every township, lordship, or village; and it is said there

POWER-LOOMS IN FACTORIES ARE DRIVEN EITHER BY WATER OR STEAM; AND MANY OF THEM ARE ADMIRABLE SPECIMENS OF MECHANISM.

ought to be one in every parish, the want whereof is punishable in a court-leet.

POURPRES'TRE, in law, any encroachment on the highway, by the erection of a shed, or the throwing out a window, &c.

POW'ER, in a philosophical sense, the faculty of doing or performing anything. The exertion of *power* proceeds from the will; and in strictness, no being destitute of will or intelligence can exert power.——*Active power* is that which moves the body; *speculative power* is that by which we see, judge, remember, or, in general, by which we *think*. Power may exist without exertion: we have *power* to speak when we are silent. This word, indeed, has an almost unlimited signification, whether as regards animal strength or mental ability: we speak of the *powers* of genius; the reasoning *powers;* the *power* which a man has of relieving the distressed; his moral *power*, &c.——*Power* also means force or momentum; as, the power of the wind, which propels a ship or overturns a building; or the immense power of steam when applied to machinery.——*Power*, in mechanics, any force which, applied to a machine, sets it in motion. There are six simple machines, which are particularly denominated the six mechanical *powers*, namely, the *lever*, the *balance*, the *screw*, the *wheel and axle*, the *wedge*, and the *pulley*. The simple weight, as applied to clocks, jacks, and other machines, is the power which can be most easily applied as a first mover, and its action also is most uniform. As this power requires to be renewed after a certain period, it is mostly used for slow movements. The spring is a useful moving power, but, like the weight, it requires to be wound up after a certain time, whence it is also chiefly used for slow movements. The spring differs from the weight in one remarkable respect, which is, that its action is never uniform, being strongest when most bent; but there are methods of rectifying this defect. Thus the chain of a watch is made to wind on a conical piece of metal, which assists the action of the spring when it is wanted.—The steam of boiling water is a most powerful agent, and recent improvements have extended the application of it from the smallest to the most powerful engines. The power of a horse will raise a weight over a pulley 80lbs. four miles an hour, which is equal to drawing a load of two tons on a level road the same distance.——*Power*, in arithmetic, the product of any quantity multiplied by itself any number of times, as the square, cube, biquadrate, &c.——*Power*, in law, the authority which one man gives another to act for him. The instrument or deed by which this is done is called a *power of attorney*.

POWTER, an appellation given to a certain kind of pigeon which has a habit of swelling up its neck when it is displeased.

POYNING'S LAW, an act of parliament made under Henry VII., whereby the law of England became in force in Ireland. It derived its name from Sir Edward Poyning, then lord lieutenant of Ireland.

PRAC'TICE, in arithmetic, a neat and easy way of determining the amount of numbers of articles at a price, by taking the aliquot parts of a pound or shilling, dividing accordingly, and adding the quotients together for pounds or shillings.——*Practice of the courts*, in law, the form and manner of conducting or carrying on suits at law or in equity.

PRÆCEP'TORIS, in ecclesiastical affairs, certain benefices having their name from being possessed by the more eminent Templars, whom the chief master, by his authority, created and called *Præceptores Templi*.

PRÆ'CIPE IN CAPITE, in law, a writ issuing out of the court of chancery for a tenant who held of the king in chief, as of his crown, and not as of any honour, castle, or manor.

PRÆCIPITA'TIO DE ROBURE, in antiquity, a capital punishment among the Romans, which consisted in throwing the criminal headlong from that part of the prison which was called *Robur*.

PRÆCOG'NITA, things previously known in order to understand something else. Thus a knowledge of the structure of the human body is one of the *præcognita* of medical science and skill.

PRÆFEC'TURE, in antiquity, an appellation given to certain towns in Italy, whose inhabitants had the name of Roman citizens, but were neither allowed to enjoy their own laws nor magistrates, being governed by annual prefects sent from Rome. These were generally such places as were suspected, or had some way or other incurred the displeasure of the state.—The title *præfectus* was given to many officers in ancient Rome.

PRÆMUNI'RE, in law, a writ granted against a person for introducing and maintaining the papal power, creating an *imperium in imperio*, and yielding that obedience to the mandates of the pope, which constitutionally belongs to our rightful sovereign.

PRÆNO'MEN, among the Romans, like our Christian name, served to distinguish brothers, &c., from each other; as Caius, Lucius, Marcus, Julius, &c. Care was generally taken, in conferring the *prænomen*, to give that of the father to the oldest, that of the grandfather to the second, and so on. The *prænomen* was not brought into use till long after the *nomen*, or family name.

PRÆTEX'TA, or TOGA PRÆTEX'TA, was a long white robe, with a purple border, originally appropriated by Tullius Hostilius to the Roman magistrates and some of the priests; but afterwards worn by children of quality, by boys till the age of seventeen, when they assumed the toga virilis; and by girls till they were married.

PRÆTOR, a chief magistrate among the Romans, instituted for the administration of justice in the absence of the consuls. The office of *prætor* was instituted in the year of the city 388, to administer justice in the city, instead of the consuls, who were at that time wholly engaged in foreign wars. The institution also was intended to com-

THE "GREAT POWERS OF EUROPE" IS A TERM OF MODERN DIPLOMACY, FOR BRITAIN, FRANCE, AUSTRIA, PRUSSIA, AND RUSSIA.

pensate to the nobility the loss of their exclusive right to the consulship, to which honour the commons had now put in their claim, and succeeded. The prætor decreed and proclaimed public feasts, had the power to make and repeal laws, with the approbation of the senate and the people; and kept a register of all the freed-men who were enfranchised at Rome. In the absence of the consuls he had a right to command the armies; he also commanded the *quæstors*, who served him as lieutenants, and were charged with part of the business of his office. He was entitled to the *prætexta*, the curule chair, and two lictors to walk before him in Rome, and six when out of the city.

PRÆTORIA'NI, Prætoriæ Cohortes, or *Pretorian Guards*, were the emperor's guards, who in time were increased to ten thousand. The Prætorian bands owe their first institution to Scipio Africanus, who chose for his guards a company of the bravest men in his army; but in time they became very inimical to the liberties of their country.

PRÆTO'RIUM, among the Romans, denoted the hall or court where the prætor administered justice: it was also his palace.

PRAGMAT'IC SANC'TION, in the civil law, is a rescript or answer of the sovereign, delivered by advice of his council to some college, order, or body of people, who consult him in relation to the affairs of their community. A similar answer given to an individual is called simply a rescript.—— The term *pragmatic sanction* was given to the settlement made by Charles VI., emperor of Germany, when, having no sons, in 1722 he settled his hereditary dominions on his eldest daughter, the archduchess Maria Theresa.

PRA'IRIE (a French word, signifying a *meadow*), used to designate the remarkable natural meadows, or plains, which are principally found in the Mississippi valley, N. America. They are classed as follows:— 1. The *heathy*, or *bushy*, which have springs, and are covered with small shrubs, bushes, grape-vines, &c., very common in Indiana, Illinois, and Missouri. 2. The *dry*, or *rolling*, generally destitute of water, and almost all vegetation but grass. These are the most common and extensive: the traveller may wander for days in these vast and nearly level plains, without wood or water, and see no object rising above the plain of the horizon. In this kind of prairies roam immense herds of bisons. 3. The *alluvial* or wet prairies form the third and smallest division; they are covered with a rich vegetation, and have a black, deep, and friable soil, of inexhaustible fertility; but in a state of nature they are covered with tall rank grass, and in the rainy season are frequently overflowed, or contain numerous pools, the waters of which pass off solely by evaporation.

PRAM, or PRAAM, a flat-bottomed boat or lighter, used in Holland for conveying goods to or from a ship in loading or unloading. Also a kind of floating battery mounting several cannon, used in covering the disembarkation of troops.

PRAT'IQUE, in commerce, a license or permission to hold intercourse and trade with the inhabitants of a place, after having performed quarantine, or upon a certificate that the ship did not come from an infected place.

PREAD'AMITE, an appellation given to the inhabitants of the earth, who by some are supposed to have lived before Adam

PRE'AMBLE, in law, the introductory matter to a statute, which contains the reasons for making such an enactment.

PREB'END, the stipend or maintenance a prebendary receives out of the estate of a cathedral or collegiate church. Prebends are *simple* or *dignitary*; a simple prebend has no more than the revenue for its support; but a prebend with dignity, has always a jurisdiction annexed to it.

PREB'ENDARY, an ecclesiastic who enjoys a prebend. The difference between a prebendary and a canon is, that the former receives his prebend in consideration of his officiating in the church; but the latter merely in consequence of his being received into the cathedral.

PRECE'DENCE, by custom and courtesy, the right of taking place before another, which is determined by authority, and followed exactly on all public occasions of processions and the like.

PRE"CEDENT, in law, a judicial decision, which serves as a rule for future determinations in similar or analogous cases: thus the precedents of a court have the force of laws, and no court will reverse a judgment contrary to many precedents.—— *Precedent* also frequently denotes an original authentic instrument or writing, which serves as a form to draw others by.

PRECEN'TOR, the chanter or master of the choir in a cathedral.

PRE'CEPT, in law, a command in writing sent by a justice of the peace, &c., for bringing a person, record, or other matter before him.—In a general sense, a *precept* signifies any commandment or order intended as an authoritative rule of action; but applied particularly to commands respecting moral conduct. Hence *preceptor*, a teacher.

PRECES'SION of the EQ'UINOXES, in astronomy, a motion of the axis of the earth, by which the equinoctial points, or nodes, recede, with reference to the stars, 1° 23′ 45″ in a century. It appears that the pole, the solstices, the equinoxes, and all the other points of the ecliptic, have a retrograde motion, and are constantly moving from east to west, or from Aries towards Pisces, &c., by means of which the equinoctial points are carried further and further back among the preceding signs or stars at the rate of about 50¼″ each year; which retrograde motion is called the *precession*, *recession*, or *retrocession*, of the equinoxes. It was discovered by Hipparchus, a century and a half before the Christian era, though it is alleged that the astronomers of India had discovered it long before.

PRECIP'ITATE, in chemistry, is any matter or substance which, having been

THE PRECESSION OF THE EQUINOXES IS OWING TO THE SPHEROIDAL FIGURE OF THE EARTH WHICH ITSELF ARISES FROM THE EARTH'S ROTATION

dissolved in a fluid, falls to the bottom of the vessel on the addition of some other substance, capable of producing a decomposition of the compound. The term is generally applied when the separation takes place in a flocculent or pulverulent form; in opposition to crystalization, which implies a like separation in an angular form. But chemists call a mass of crystals a *precipitate*, when they subside so suddenly, that their proper crystaline shape cannot be distinguished by the naked eye.——*Precipitate per se*, or *red precipitate*, the red oxyde or peroxyde of mercury.

PRECIPITA'TION, in chemistry, the process of decomposition by which any body separates from others in a solution and falls to the bottom.

PREDESTINA'TION, in theology, a term to denote the pre-ordination of men by the Supreme Being to everlasting happiness or misery. One who believes in this doctrine is called a *predestinarian*.

PREDIC'AMENT, in logic, a category. The school philosophers distribute all the objects of our thoughts and ideas into genera or classes, which the Greeks call *categories*, and the Latins *predicaments*.

PRED'ICATE, in logic, that part of a proposition which affirms or denies something of the subject: thus, in these propositions, "snow is white, ink is not white," whiteness is the *predicate* affirmed of snow, and denied of ink.

PRE-EMP'TION, the right of purchasing before others. Prior discovery of land inhabited by uncivilized tribes is held to give the discoverer the *pre-emption*, or right of purchase before others.

PREEN, to clean, arrange, and dress the feathers, as fowls, to enable them to glide more easily through the air or water. For this purpose they are furnished with two glands on their rump, which secrete an oily substance into a bag, from which they draw it with the bill and spread it over the feathers.

PRE'FIX, or AF'FIX, in grammar, a particle put to the beginning of a word, either to vary its form or alter its signification.

PREHEN'SILE, adapted to seize or grasp. Thus we say, the tails of some monkeys are *prehensile*.

PREHN'ITE, a mineral of the siliceous kind, of an apple-green or greenish gray colour. It has been called shorl, emerald, chrysoprase, felspath, chrysolite, and zeolite. It is massive or crystalized, but the form of its crystals cannot be determined in consequence of their aggregation.

PRE"JUDICE, decision neither founded upon nor consistent with reason, and the error of ignorance, weakness, or idleness. It is the enemy of all truth, knowledge, and improvement; and is the blindness of the mind, rendering its powers useless and mischievous. Innumerable are the prejudices we imbibe in our youth; we are accustomed to believe without reflection, and to receive opinions from others without examining the grounds by which they can be supported.

PRELATE, an ecclesiastic raised to some eminent dignity in the church; as a bishop, an archbishop, or a patriarch. The office or dignity of a prelate is called a *prelacy*.

PRELIM'INARY, in general, denotes something to be examined and determined before an affair can be treated of to the purpose. The *preliminaries of peace* consist chiefly in settling the powers of ambassadors, and certain points in dispute, which must be determined previous to the treaty itself.

PREM'ISES, in logic, the two first propositions of a syllogism, from which the inference or conclusion is drawn. Also, propositions antecedently proposed or proved. ——*Premises*, in law, lands, tenements, &c. before mentioned in a lease or deed.

PRE'MIUM, properly, a reward or recompense; but it is chiefly used in a mercantile sense for the sum of money given to an insurer, whether of ships, houses, lives, &c. Also the recompense or prize offered for a specific discovery, or for success in an enterprise. It is sometimes synonymous with *interest*; but generally it is a sum per cent. distinct from the interest; as, the bank lends money to government at a *premium* of 2 per cent.

PREMON'STRANTS, a religious order of regular canons or monks of Prémontré, in the isle of France; instituted in 1120.

PREMOR'SE, in botany, an epithet which, when applied to *roots*, means such as are not tapering, but blunt at the end; when applied to *leaves*, such as end very obtusely with unequal notches.

PREPEN'SE, in law, premeditation and forethought as applied to bad actions; whence the term *malice prepense*.

PREPOSI'TION, in grammar, a part of speech, which is used to show the relation of one subject to another.

PREROG'ATIVE, an exclusive or peculiar privilege.——The *royal prerogative* is that special pre-eminence which a sovereign has not only over other persons, but over the ordinary course of the common law, in right of the regal dignity. Among these are the right of appointing ambassadors, and of making peace and war.——It is the *prerogative* of the house of lords in Great Britain to decide legal questions after the decisions of the courts of law have been appealed against. It is the *prerogative* of the house of commons to determine the validity of all elections of their own members. It is the *prerogative* of a father to govern his children. And the right of governing created beings is the *prerogative* of the Great Creator.

PREROG'ATIVE COURT, an ecclesiastical court established for the trial of all testamentary causes, where the deceased has left *bona notabilia* (5*l*.) within two different dioceses. In which case the probate of wills belongs to the archbishop of the province, by way of special prerogative. And all causes relating to the wills, administrations, or legacies of such persons, are originally cognizable herein, before a judge

appointed by the archbishop, called the judge of the prerogative court.

PRESBYO'PIA, in medicine, that defect in vision by which objects that are near are seen confusedly, but those at a distance more distinctly. It proceeds from various causes, but generally arises from too great flatness in the crystaline humour, and is common with aged persons.

PRES'BYTER, in the primitive Christian church, an elder; one who had authority in the church, and whose duty was to watch over the flock. The word is borrowed from the Greek translation of the Old Testament, where it usually signifies a ruler or governor; it being a title of office and dignity, not of age, and in this sense bishops are sometimes called presbyters in the New Testament.

PRESBYTE'RIANS, a sect of Protestants, so called from their maintaining that the government of the church appointed in the New Testament was by *presbyteries;* that is, by ministers and ruling elders, associated for its government and discipline. ——The kirk or church of Scotland is governed by presbyteries, synods, and general assemblies: which constitution was introduced from Geneva, together with the doctrines of Calvin, the reformer of that country, by the well-known John Knox. In the kirk of Scotland there are fifteen synods, and sixty-nine presbyteries. The presbyterians stand opposed to the *episcopalians,* the latter preferring the hierarchy of bishops; and to *congregationalists* or *independents,* who hold every *pastor* to be as a bishop or overseer of his own congregation, *independent* of any person or body of men.

PRESCRIPTION, in law, a right and title to a thing grounded upon a continued possession of it beyond the memory of man.——*Prescription* differs from *custom,* which is a local usage. Prescription is a *personal* usage annexed to the person.——*Prescription,* in medicine, a direction of remedies for a disease and the manner of using them, as prescribed by a physician.

PRES'ENCE OF MIND, that calm, collected state of the mind and faculties, which enables a person to speak or act without disorder or embarrassment in unexpected difficulties.

PRES'ENT TENSE, in grammar, the tense or form of a verb which expresses action or being in the present time, as "I am reading;" or something that exists at all times, as "temperance is always to be preferred to excess;" or it expresses habits or general truths, as plants *grow;* birds *fly;* dogs *bark,* &c.

PRESENTA'TION, in ecclesiastical law, the act of a patron offering his clerk to the bishop, to be instituted in a benefice of his gift. An advowson is the right of presentation. A patron may revoke his presentation before institution, but not afterwards.

PRESENT'MENT, in law, a declaration or report made by jurors or others of any offence to be inquired of in the court to which it is presented.

PRES'ENTS, in the *plural,* is used in law for a deed of conveyance, a lease, or other written instrument; as in the phrase "Know all men by these *presents;*" that is, by the writing itself, *per presentes.*

PRESERVE, a small enclosed place in gentlemen's grounds, where game is preserved.

PRES'IDENT, an officer appointed to preside over a corporation, company, or assembly of men, to keep order, manage their concerns, or govern their proceedings. Also an officer appointed or elected to govern a province or territory, or to administer the government of a nation.——*Vice-president,* one who is second in authority to the president, and performs the duties of president when the latter is disabled or absent.

PRESS, a machine or instrument by which things are compressed. It acts by means of the screw, and serves for different purposes, as a wine-press, a cheese-press, &c.——By *the press* is meant the publications which are issued through the means of printing. "A free press is a great blessing to a free people; a licentious press is a curse to society."——*Liberty of the press.* [See LIBERTY.]

PRESS'-GANG, a detachment of seamen under the command of an officer, empowered to impress men into the naval service.

PRESS MAN, in printing, a workman who manages the press and impresses the sheets.

PRESS'URE, the force of one body acting on another by weight or the continued application of power. Pressure is occasioned by weight or gravity, by the motion of bodies, by the expansion of fluids, by elasticity, &c. The degree of pressure is in proportion to the weight of the pressing body, or to the power applied, or to the elastic force of resisting bodies.——In a moral sense, we speak of the *pressure* of debts, the *pressure* of taxes, the *pressure* of afflictions, &c.

PRESTATION MON'EY, a sum of money paid yearly by archdeacons and other dignitaries to their bishop, *pro exteriore jurisdictione.*

PRES'TIMONY, in canon law, a fund for the support of a priest, appropriated by the founder, but not erected into any title of benefice, and not subject to the pope or the ordinary.

PREST'-MONEY, called *earnest-money,* the sum given to a soldier at the time he enlists, so called because it binds the receiver to be ready for service at all times appointed.

PRESUMP'TIVE EVIDENCE, in law, is that which is derived from circumstances which necessarily or usually attend a fact, as distinct from direct evidence or positive proof.

PRETEN'SION, a holding out the appearance of right or possession of a thing, with a view to make others believe what is not real, or what, if true, is not yet known or admitted. There are ill-founded pretensions and well-founded pretensions: for instance, a man may make *pretensions*

BY THE ENGLISH LAW, THERE IS NO RIGHT OF PRIMOGENITURE AMONG FEMALES, EXCEPT AS TO THE INHERITANCE OF THE CROWN.

to rights which he cannot maintain, or to skill which he does not possess; and he may make *pretensions* to acquirements which he really possesses, but is not known to possess.

PRETERIMPER'FECT, in grammar, an epithet designating the tense which expresses action or being not perfectly past.

PRE'TERIT, in grammar, an epithet applied to the tense which expresses an action perfectly past or finished, but without a specification of time. It is called also the *perfect* tense; as *scripsi*, I have written.

PRETERI''TION, in rhetoric, a figure by which, in pretending to pass over anything, we make a summary mention of it; as, "I will not say the prince is noble, or that he is as learned as he is accomplished," &c. The most artful praises are those bestowed by way of *preterition*.

PRETERNATU'RAL, an epithet for those events in the physical world which are deemed extraordinary, but not miraculous; in distinction from events which are *supernatural*, which cannot be produced by physical laws or powers, and must therefore be produced by the direct intervention of Omnipotence.

PRETERPER'FECT, in grammar, an epithet equivalent to *preterit*, applied to the tense of verbs which expresses action or being absolutely past.

PRETERPLUPER'FECT, literally "beyond more than perfect;" an epithet in grammar, designating the tense of verbs which expresses action or being past, prior to another past event or time.

PREVARICA'TION, a deviation from the plain path of truth and fair dealing; a shuffling or quibbling to evade the truth or the disclosure of truth.——In the civil law, the collusion of an informer with the defendant, for the purpose of making a sham prosecution.——In common law, a seeming to undertake a thing falsely or deceitfully, for the purpose of defeating or destroying it.

PREVENTIVE SERVICE, an appellation for the duty performed by the armed police officers engaged to watch the coasts, for the purpose of preventing smuggling and other illegal acts. The men thus employed are also sometimes termed the *coast blockade force*.

PRICE CURRENT, in commerce, a published list or enumeration of the various articles of merchandise, with their prices, the duties (if any) payable thereon when imported or exported, with the drawbacks occasionally allowed upon their exportation.

PRIEST, according to the modern acceptation of the word, is a person who is set apart or consecrated to the ministry of the Gospel. In its most general sense the word includes all orders of the clergy duly licensed according to the forms and rules of each respective denomination of Christians: but Protestants are accustomed to apply the word more especially to clergymen of the Roman catholic persuasion.——In primitive ages, the fathers of families, princes, and kings were priests. In the days of Moses the office of priest was restricted to the tribe of Levi, and the priesthood consisted of three orders, the high-priest, the priests, and the Levites; and the office was made hereditary in the family of Aaron. ——Among pagans, priests were persons whose appropriate business was to offer sacrifices and perform other sacred rites of religion.

PRI'MACY, the chief ecclesiastical station or dignity. The archbishop of Canterbury is *primate* of all England.

PRI'MÆ VI'Æ, the medical term for the whole alimentary duct; including the œsophagus, stomach, and intestines, with their appendages.

PRIMA'TES, in zoology, the first order of animals under the class *Mammalia* in the Linnæan system, including the four genera —*Homo; Simia*, the ape, monkey, &c.; *Lemur*, the lemur; and *Vespertilio*, the bat.

PRI'MAGE, in commerce, a small duty payable to the master and mariners of a ship.

PRI'MING, among painters, the first colour laid on canvas or on a building, &c. ——The powder in the pan of a gun.

PRIM'ITIVE, in grammar, is a root or original word in a language, in contradistinction to derivative: thus *God* is a primitive; *godly* a derivative.

PRIMOGEN'ITURE, in law, the right of the first-born. It has been frequently observed, and with much truth, that this right seems to be an unjust prerogative, and contrary to the natural right; for since it is birth alone gives children a title to the paternal succession, the chance of primogeniture should not throw any inequality among them. It was not till the race of Hugh Capet, that the prerogative of succession to the crown was appropriated to the first born. By the ancient custom of gavelkind, still preserved in Kent, primogeniture is disregarded, the paternal estate being equally shared among the sons. [See FEUDAL SYSTEM.]

PRIM'ROSE, in botany, a well-known plant which blossoms in spring, of the genus *Primula*, of several varieties.

PRINCE, a general title for all sovereigns or persons exercising the functions of government in an independent manner, even though they are permitted so to do by the will of another.

PRIN'CIPAL, in commerce, is the capital of a sum due or lent, so called in opposition to *interest*. It also denotes the first fund put by partners into a common stock, by which it is distinguished from the calls or accessions afterwards required.——In law, the absolute perpetrator of a crime is called a *principal* in the first degree; a *principal* in the second degree, is one who is present, aiding and abetting; distinguished from an *accessary*.

PRIN'CIPLE, in a general sense, the origin, source, or primordial substance of any thing.——In science, a truth admitted either without proof, or considered as having been before proved.——In ethics, that which is believed, and serves as a rule of

THE FIRST BORN IN THE PATRIARCHAL AGES HAD A SUPERIORITY OVER HIS BRETHREN, AND A DOUBLE PORTION OF THE INHERITANCE.

action or the basis of a system; as the *principles* of morality; the *principles* of the Stoics, &c.

PRINTING, the art of taking impressions from wooden-blocks, types, or plates, upon paper, silk, calico, or any other substance.——Printing, or Typography, is that very important art by means of which copies of books are multiplied, and consequently, knowledge and science diffused among mankind. It is understood to have been practised very anciently in China; but Chinese printing differs from European essentially, and the praise of rendering the art truly valuable to the human race belongs to him who first introduced movable types. In their first essays, Guttenburg, Faust, and Mentz all used wooden blocks, on which the letters were cut in the Chinese manner; and from the specimens that remain, it appears that they impressed only one side of the paper, taking the pains to paste the blank faces of every two leaves together, to make one with print on either side. After this, they used single letters of wood; and at length, letters of metal. This last great invention is generally attributed to Schoeffer, first the servant, and afterwards the partner and son-in-law of Faust. At the invention of printing, the character of type employed was the old Gothic or German. The Roman type was first introduced by Sweynheim and Paunartz, at Rome, and the *Italic* by Aldus. The earliest complete Greek work was a grammar of that language, printed at Milan in 1476. The Pentateuch, which appeared in 1482, was the first work printed in the Hebrew character, and the earliest known Polyglott bible—Hebrew, Arabic, Chaldaic, Greek, Latin—issued from the press of Genoa in 1516. The art of printing was first introduced into England by William Caxton, a native of Kent, who established a press in Westminster Abbey, some time between 1471 and 1474. Before the middle of the 16th century printing had reached a flourishing condition in England; for it is recorded that, in the reign of Henry VIII. and his successors, English printers had become "so skilful as to print books as well as any beyond the seas." In Scotland the art is not known to have existed earlier than the year 1500; and about fifty years after that time we find it was introduced into Ireland. But Scotland was not long before it distinguished itself by the extent and beauty of its typographical productions; while Ireland can hardly be said to have advanced a step in the art of printing *books* till the beginning of the 18th century.—The workmen by whom the art of printing is performed are of two kinds, *Compositors*, who range and dispose the letters into words, lines, pages, and sheets; and, 2. *Pressmen*, who apply the ink and take off the impressions. Until a comparatively recent period, the printing press was chiefly formed of wood; and, for the first essential modification of it, the world is indebted to the late earl Stanhope. His (the Stanhope) press is composed entirely of iron; the table on which the types rest, and the platten (or surface which gives the impression) are made perfectly level; a beautiful combination of levers is added to give motion to the screw, causing the platten to descend with increasing rapidity, and consequently with increasing force, till it reaches the type, when a very great power is obtained. Various other iron presses, more or less upon the principle of the "Stanhope," with such improvements as time and farther experience suggested, were subsequently made; among which the ingenious inventions of Messrs. Clymer, Ruthven, Cogger, and Cope deserve to be mentioned: but still they were only presses, acting by a reciprocating, not by a continuous motion: and it is a remarkable fact, that from the invention of printing to the year 1798, a period of nearly three hundred years, no improvement had been introduced into this important art. A new era had, however, arrived, when the demands for prompt circulation of political intelligence required powers of printing newspapers beyond the reach of the most expeditious hand presswork; and at length the automatic printing machine struggled into existence. A mere outline of the improvements which have taken place since the commencement of the present century, would occupy many pages. The great triumph in the art has, however, been the substitution of cylindrical machinery for the screw-press. The *suggestion* of this improvement belongs to Mr. W. Nicholson, the able editor of the Philosophical Journal; but the first *working* machines were erected by Mr. König (from Saxony), who was engaged for several years in this country in bringing his machines to perfection; and, at length, the reader of the *Times* newspaper was told, on Nov. 28th, 1814, that he held in his hand a newspaper printed by machinery, and by the power of steam! In these machines the type was made to pass under the cylinder, on which was wrapped the sheet of paper, the paper being firmly held to the cylinder by means of tapes; the ink was placed in a cylindrical box, from which it was forced by means of a powerful screw depressing a tightly-fitted piston; thence it fell between two iron rollers; below these were placed a number of other rollers, two of which had, in addition to their rotary motion, an end motion, *i. e.* a motion in the direction of their length; the whole system of rollers terminated in two, which applied the ink to the types. This machine produced 1100 impressions per hour; subsequent improvements raised them to 1800 per hour. The next machine, also by Mr. König, was for printing both sides of the sheet, by conveying the sheet from one paper cylinder to the other. This was made in 1815, and printed 1000 sheets on both sides per hour. In the same year Mr. Cowper obtained a patent for curving stereotype plates, for fixing them on a cylinder. These machines, though only adapted for stereotype printing, first showed the best method of furnishing, distributing, and ap-

IN THE EARLY HISTORY OF THE ART OF PRINTING, THE MOST LEARNED MEN WERE PROUD TO ACT AS CORRECTORS OF THE PRESS.

plying the ink by rollers. Messrs. Applegath and Cowper, however, by their conjoint ingenuity, superseded Mr. König's inventions, and constructed a number of machines, modified in twenty-five different ways, for printing books, bank-notes, newspapers, &c.: their greatest success has been in printing newspapers. In the *Times* machine, constructed by Applegath and Cowper, the form passes under four printing cylinders, which are fed with sheets of paper by four lads, and after the sheets are printed they pass into the hands of four others; by this contrivance 4000 sheets per hour are printed on one side.—In this brief and necessarily imperfect account of *printing*, the reader must expect no more than a mere outline of its early history, and the striking improvements which have recently been made. And we shall conclude it with the following philosophic observations by Dr. Ure: "In reviewing those great eras of national industry, when the productive arts, after a long period of irksome vassalage, have suddenly achieved some new conquest over the inertia of matter, the contemplative mind cannot fail to be struck with the insignificant part which the academical philosopher has generally played in such memorable events. Engrossed with barren syllogisms, or equational theorems, often little better than truisms in disguise, he nevertheless believes in the perfection of his attainments, and disdains to soil his hands with those handicraft operations at which all improvements in the arts must necessarily begin. He does not deem a manufacture worthy of his regard, till it has worked out its own grandeur and independence with patient labour and consummate skill. In this spirit the men of speculative science neglected for 60 years the steam-engine of Newcomen, till the artisan Watt transformed it into an automatic prodigy; they have never deigned to illustrate by dynamical investigations the factory mechanisms of Arkwright, yet nothing in the whole compass of art deserves it so well; and though perfectly aware that revolvency is the leading law in the system of the universe, they have never thought of showing the workman that this was also the true principle of every automatic machine. These remarks seem to be peculiarly applicable to book-printing, an art invented for the honour of learning and the glory of the learned, though they have done nothing for its advancement; yet by the overruling bounty of Providence it has eventually served as the great teacher and guardian of the whole family of man."

PRI'OR, the superior of a convent of monks, or one next in dignity to an abbot.

PRI'SAGE, an ancient right belonging to the crown of England, of taking two tuns of wine from every ship importing twenty tuns or more. This, by charter of Edward I., was exchanged into a duty of two shillings for every tun imported by merchant strangers, and called *butlerage*, because paid to the king's butler.

PRISCIL'LIANISTS, in church history, a Christian sect, so called from their leader Priscillian, a Spaniard by birth, and bishop of Avila. He is said to have practised magic, and to have maintained the principal errors of the Manichees; but his peculiar tenet was, that it is lawful to make false oaths in the support of one's cause and interest.

PRISM, in geometry, an oblong solid, contained under more than four planes, whose bases are equal, parallel, and alike situated. If the body be triangular, it is called a triangular prism; if square, a quadrangular one.——*Prism*, in dioptrics, a triangular glass body used in experiments respecting the nature of light and colours. The phenomena and uses of the prism arise from its separating the rays of light in their passage through its substance; and the doctrine it is understood to demonstrate is, that colours are original and unchangeable properties, inherent in light itself. The sun's rays, transmitted through a prism to an opposite wall, project an image, like a rainbow. Its colours, which are various and vivid, are red, yellow, blue, green, and violet: and the whole phenomenon is explained upon the principle that the coloured rays, which were before mixed and blended together, are now, in virtue of their different refrangibilities, separated by refraction, in passing through the prism, and each colour thrown by itself.

PRIVATEER', a ship or vessel of war owned and equipped by private persons at their own expense, and who are permitted by the government to seize or plunder the vessels of an enemy in war. The owners of privateers must give bond not to break the stipulations of treaties subsisting with their government, and not to misuse their captives. If a ship be fitted out and act as a privateer without being licensed or commissioned by government, it is a pirate. That the severest restrictions should be enforced on privateering is manifestly for the interest of individuals, to whatever belligerent power they belong. The wish to amass plunder is the only principle by which they are actuated; and such being the case, it would be idle to suppose that they should be very scrupulous about abstaining from excesses.

PRIV'ATIVE, in grammar, a prefix to a word which changes its signification, and gives it a contrary sense; as *un* and *in*: *unwise*, *inhuman*.

PRIV'ET, in botany, a well-known shrub of the genus *Ligustrum*. The *evergreen privet* is of the genus *Rhamnus*.

PRIV'ILEGE, in law, some peculiar benefit granted to certain persons or places, contrary to the usual course of the law, or beyond the common advantages of other citizens. Thus the nobles of Great Britain have the *privilege* of being tried by their peers only; and members of parliament have the *privilege* of exemption from arrests in certain cases.

PRIVY-COUNCIL, in British polity, an executive body, with whose assistance the crown issues proclamations, which, if not

contrary to law, are binding on the subject. Anciently, the *privy-council* was a high court of justice; but in modern times it seldom or never interferes with judicial matters, confining itself to the executive branch of government. A privy-council is summoned on a warning of forty-four hours, and never held without the presence of a secretary of state. In debates, the lowest delivers his opinion first; the sovereign, if present, last; and though the privy-councillors thus give their opinions, it is that of the sovereign alone which is decisive.

PRIVY-SEAL, a seal affixed by the queen, or by the lord keeper of the privy-seal, to instruments that afterwards pass the great seal.——The word *privy-seal* is also used elliptically for the person intrusted with the privy-seal; as, "the queen's sign manual is the warrant to the *privy-seal*, who makes out a writ or warrant thereon to the chancery."

PRO AND CON, i.e. *pro* and *contra*, for and against, a phrase frequently occurring in common parlance.

PRO'A, a vessel used in the South Seas, with the head and stern exactly alike, but with the sides differently formed; that intended for the lee side being flat, the other rounded. To prevent oversetting, the proa is furnished with a frame extended from the windward side, called an outrigger.

PROBABIL'ITY, that state of a question which falls short of moral certainty, but inclines the mind to receive it as the truth. Demonstration produces certain knowledge; proof produces belief, and *probability* opinion.——If the chance that a thing may happen is less than the chance that it may not happen, it is said to be probable; and the numbers which express these variable chances, when ascertained, constitute what is termed the *science of probabilities*. As applied to human life, founded on tables of mortality, it serves as the foundation of societies which, for certain annual premiums, varied according to age, undertake to pay certain sums to the heirs of the party, whose life is thereby insured for that sum.

PRO'BATE, in law, the proof of the genuineness and validity of a will, or the exhibition of the will to the proper officer, and such other proceedings as the law prescribes, as preliminary to the execution of it by the executor.

PROB'LEM, in logic, a proposition that appears neither absolutely true nor false, and consequently may be asserted either in the affirmative or negative.——In geometry, a proposition in which some operation or construction is required, as to divide a line or an angle, &c.——In algebra, a question or proposition which requires some unknown truth to be investigated, and the truth of the discovery demonstrated.——In general sense, a *problem* may be defined, any question involving doubt or uncertainty, and requiring some operation or further evidence for its solution.

PROBOS'CIS, in natural history, the trunk or snout of an elephant, and of some other animals, particularly of insects. Flies, gnats, &c. are furnished with a proboscis, or trunk, by means of which they suck the blood of animals and the juices of vegetables.

PROCATARX'IS, in medicine, the predisposing cause of a disease: the *procatarctic* cause.

PRO'CEEDS, in commerce, the sum, amount, or value of goods sold or converted into money.

PROCELLA'RIA, in ornithology, the *Storm-bird*, a genus of birds belonging to the order of the *passeres*. It is about the size of the common water-wagtail, and its general colour is black, except that the covering feathers of the wings have some white towards their tips. When it hovers about ships it is a sure token of an approaching storm.

PRO'CESS, in law, the whole course of proceedings in any cause, real or personal, civil or criminal, from the original writ to the end of the suit. In a more limited sense, process denotes that by which a man is first called into any temporal court.—— *Original process* is the means taken to compel the defendant to appear in court. *Mesne process* is that which issues, pending the suit, upon some collateral or interlocutory matter. *Final process* is the process of execution.——*Process*, in chemistry, the whole course of an experiment or series of operations, tending to produce something new. *Process*, in anatomy, any protuberance, eminence, or projecting part of a bone.

PRO'CHRONISM, an error in chronology, when events are dated anterior to the time at which they happened.

PROCLAMA'TION, a public notice or declaration of anything in the name of the sovereign or supreme magistrate. Proclamation is used for a solemn declaration of war and peace, and for the act of notifying the accession of a prince to the throne; also for the public declaration used at the calling of a court; and for various other objects.

PRO CONFES'SO, in law, a term applied to a defendant in chancery who appears and is afterwards in contempt for not answering; wherefore the matter contained in the bill shall be taken *pro confesso*, that is, as though it had been confessed.

PROCON'SUL, a Roman magistrate sent to govern a province with consular authority. The proconsuls were appointed from the body of the senate, and their authority expired at the end of a year from their appointment. Before the proconsul quitted Rome, he went up to the Capitol, offered sacrifice, put on the robe of war called *paludamentum*, and then departed from the city in pomp, preceded by lictors, with rods and axes, and attended by his friends to some distance from Rome. His equipage, consisting of pavilions, horses, mules, clerks, secretaries, &c. was called his *viaticum*, and provided at the public expense.

PROCTOR, a person employed to manage another's cause in a court of civil or ecclesiastical law, as in the court of admi-

ralty, or in a spiritual court.——Also the magistrate or superintendant of a university.

PROCUM'BENT, in botany, trailing; unable to support itself, and therefore lying on the ground, but without putting forth roots; as, a *procumbent* stem.

PROCURA'TION, in law, a composition paid by an incumbent to the bishop or archdeacon, to commute for the entertainment which was to have been given him at his visitation. Also, the instrument by which a person is empowered to transact the affairs of another.

PROCURATO'RES, under the Roman emperors, were officers sent into the provinces to regulate the public revenue, receive it, and dispose of it as the emperor directed. Such an officer was Pontius Pilate in Judea; but as the Jews were looked upon as a rebellious people, besides his authority over the revenue, he was invested with all the power of a pro-consul, even a power of life and death.——*Procuratores*, in the Roman courts of judicature, were properly such lawyers as assisted the plaintiff in proving, or the defendant in clearing himself from the matter of fact alleged. They are often confounded with the *advocates*.

PRO'DUCE, in an enlarged sense, is what any country yields from labour and national growth, which may serve either for the use of the inhabitants, or be exported to foreign countries. In a more limited sense, we speak of the *produce* of a farm, of a mine, of a tax, &c.; but when we allude to a work either of nature or art, we use the word *production*.

PRO'DUCT, in arithmetic, the number or quantity produced by multiplying two or more numbers together, as $5 \times 4 = 20$, the product required.——In a general sense, that which is produced by nature, as fruits, grain, metals; as the *products* of the season.——*Productive labour* is that which increases the number or amount of products; opposed to *unproductive labour*. The labour of the farmer and mechanic is productive; the labour of officers and professional men is unproductive to the state.

PROEMPTO'SIS, in astronomy, that which makes the new moon appear a day later by means of the lunar equation than it would do without the equation.

PROFES'SION, a word which, when applied to a person's vocation or employment, designates an occupation not merely mechanical. We say, the learned *professions*; the *profession* of a clergyman, a lawyer, a physician, a surgeon, a lecturer, or a teacher. In like manner, we use the word *professional* when speaking of literary and scientific studies, pursuits, or duties.

PROFES'SOR, in its original sense, signifies one who makes open declaration of his sentiments or opinions, particularly one who makes a public avowal of his belief in the Christian doctrine and revelation.—— In its more modern and common acceptation, a *professor* is one that publicly teaches any science or branch of learning; as a professor of natural history, of mathematics, of theology, &c. In a university, some professors are denominated from the arts they profess, others from the founders of the professorships, or those who assigned a revenue for the support of the professors.

PRO'FILE, in general, the view of an object from one of its chief sides, at which more or less of the other side is hidden from the eye.——*Profile*, in sculpture and painting, a head, portrait, &c., represented sideways, or in a side view. On almost all medals, faces are represented in profile.—— *Profile*, in architecture, denotes the outline of a figure, building, or member, also the draught of a building, representing it as if cut down perpendicularly from the roof to the foundation.

PROFIT AND LOSS, in commerce, the gain or loss arising from goods bought and sold; the former of which, in book-keeping, is placed on the creditor's side; the latter on the debtor's side. *Net profit* is the gain made by selling goods at a price beyond what they cost the seller, and beyond all costs and charges.—Among the many wise precepts which appear in the pages of the "Rambler," there are few more worthy to be borne in mind than this: "Let no man anticipate uncertain profits."

PROFLU'VIA, in medicine, fluxes; the fifth order in the class *Pyrexia* of Cullen's nosology, characterized by pyrexia, with increased excretions.

PROGNO'SIS, in medicine, the art of foretelling the event of a disease by particular symptoms. Hence the word *prognostic*, a sign or symptom indicating the event of a disease.

PROGRAM'MA, or PRO'GRAMME, a detailed account or advertisement of some public performance. In a university, a billet or advertisement to invite persons to an oration.——In antiquity, an edict posted in some public place.

PROJECTILES, in mechanical philosophy, is that branch which treats of the motion of bodies thrown or driven by an impelling force from the surface of the earth, and affected by gravity and the resistance of the air.——*Projectile force*, the force of explosion or projection with which a common ball or missile is thrown, which imparted force being gradually parted with to the air, and counteracted by the constant downward force, occasions the body to describe a curve line.—The velocity of a musket ball is, on an average, 1600 feet per second, and its range half a mile. In velocities exceeding 1600 feet per second, the resistance of the air is greatly increased; hence the absurdity of giving balls too great an initial velocity. To give a bullet the velocity of 2000 feet per second, requires half as much more powder as to give it the velocity of 1600 feet; yet after both have moved 400 feet, the difference between the velocity of each is reduced to 8 feet per second. A 24-pound ball moving at the rate of 2000 feet per second, meets a resistance of 800 pounds.

PROJECTION, in architecture, the outjutting or prominency of columns, &c. be-

yond the level of the wall.——*Projection of the Sphere*, in astronomy, a representation of the circles on the surface of the sphere. There are three principal points of projection; the *stereographic*, the *orthographic*, and the *gnomonic* [which see respectively].

PROJOJOY. The following cannot fail to be regarded by the lovers of natural history as affording a most singular instance of the close connexion between the animal and vegetable world. In September, 1839, "at the ordinary scientific meeting of the Zoological Society, the first communication read was a letter from Mr. Mackay, of the British consulate, at Maracaibo, on a plant called *projojoy* in the country from which it is derived, and which arrives in this state from the strange metamorphose of an insect. In the insect, which was described, some of the legs had been already changed into roots, and in this state it was presented to the contributors. It was announced that a similar insect had been discovered in North Carolina, which assumed alternately that form along with a plant. When this hybrid creature assumes the form of an insect, or animal, it is about an inch in length, and much resembles a wasp in appearance. When the insect has attained its full length it disappears under the surface of the ground, and dies; soon after which the two head legs begin to sprout and vegetate, the shoots extending upwards, and the plant in a short time reaching the height of six inches. The branches and the leaves are like the trefoil, and at the extremities of the former there are buds, which contain neither leaves nor flowers, but an insect, which, as it grows, falls to the ground, or remains on its parent plant, feeding on the leaves till the plant is exhausted, when the insect returns to the earth, and the plant shoots forth again."

PROLEGOM'ENA, introductory or preliminary remarks prefixed to a book or treatise.

PROLEP'SIS, a figure in rhetoric, by which the speaker anticipates or prevents objections, by alluding to or answering them himself.

PROLEP'TIC, in medicine, an epithet applied to a periodical disease, whose paroxysm returns at an earlier hour every time, as is frequently the case in agues.

PROLIF'EROUS, in botany, prolific. A *proliferous stem* is one which puts forth branches only from the centre of the top, or which shoots out new branches from the summits of the former ones, as the pine and fir. A *proliferous umbel* is a compound one, which has the smaller umbels divided.

PROLIFICA'TION, in botany, the production of a second flower from the substance of the first; either from the centre of a simple flower, or from the side of an aggregate one.

PRO'LOGUE, in dramatic poetry, an address to the audience previous to the commencement of the play, delivered by one of the performers. It may either be in prose or verse, but is generally in the latter; and it usually consists of apologetic remarks on the merits of the piece about to be represented. Sometimes it relates to the situation in which the author or actors stand to the public, and sometimes it contains allusions to subjects incidental to neither.

PROLU'SION, in literature, a term formerly applied to certain pieces or compositions made previously to others, by way of prelude or exercise.

PROM'ISSORY NOTE, a writing or note of hand, promising the payment of a certain sum at a certain time, in consideration of value received by the promiser.

PROM'ONTORY, in geography, a high point of land or rock projecting out into the sea; the extremity of which towards the sea is called a headland.

PRONA'TION, in anatomy, that motion of the radius whereby the palm of the hand is turned downwards; opposed to *supination*.

PRO'NOUN, in grammar, a declinable part of speech, which being used instead of a noun, prevents the repetition of it. They are *personal* when they simply denote the person, as "I, thou, he," &c.; *possessive*, when they also denote possession, as "my, thine, his," &c.; *relative*, when they express a relation to something going before, as "which, what;" *interrogative*, when they serve to ask a question; *demonstrative*, when they point out things precisely, as "this, that." Thus we say, "the jury found the *prisoner* guilty, and the court pronounced sentence on *him*: *this* was certainly unjust, for *he* clearly proved an alibi, *which* every person thought must have led to *his* acquittal."

PROOF, in law and logic, that degree of evidence which convinces the mind of the certainty of truth or fact, and produces belief. *Proof* differs from *demonstration*, being derived from personal knowledge or conclusive reasoning; whereas the term demonstration is applicable only to those truths of which the contrary is inconceivable.——In printing and engraving, a *proof* is a rough impression taken for correction.

PROPAGAN'DA, during the French revolution, was a term applied to secret societies whose object was the propagation of democratical principles; and it has since become to signify any kind of institution for making proselytes for political objects.—The name was originally given to those institutions which were erected by the papal court, for the extension of its own power and the Catholic religion among those who were not within its pale. It was called the *congregatio de propaganda fide* (society for propagating the faith), and was founded by Gregory XV. in 1622.

PROP'ER, in heraldry, an epithet for any charge which is to be represented in coat-armour in its own proper tincture or natural colours.

PROP'ERTY, a particular virtue or quality which nature has bestowed on some things exclusive of all others: thus colour is a *property* of light; extension, figure, divisibility, and impenetrability, are proper-

EVERY SPECIES OF ORDNANCE UNDERGOES DIFFERENT KINDS OF PROOF BEFORE IT IS RECEIVED INTO HER MAJESTY'S SERVICE.

ties of bodies, &c.——*Property*, in law, is defined to be the highest right a person has, or can have, to any thing. At this day property in lands, &c., is acquired either by entry, descent, law, or conveyance; and in goods and chattels property may be gained various ways, as by gift, inheritance, or purchase. The labour of inventing, making, or producing anything, constitutes one of the highest and indefeasible titles to *property*. That also is a person's *property* to which he has a legal title, whether in his possession or not.——Much has of late been said respecting the right of an author to his literary productions, as a species of absolute *property*; and why the productions of manual labour should rank higher in the scale of rights than the productions of the intellect—or why the former should be held without limitation, and the latter be limited to a term of years—will require better arguments to substantiate than have yet been advanced.

PROPH'ET, in general, one who foretels future events; but when we speak of *the prophets*, we mean those inspired persons among the Jews who were commissioned by God to declare his will and purposes to that people. Among the canonical books of the Old Testament, we have the writings of sixteen prophets, four of which are denominated the "greater prophets," viz. Isaiah, Jeremiah, Ezekiel, and Daniel; so called from the length or extent of their writings, which exceed those of the others, viz. Hosea, Joel, Amos, Obadiah, Jonas, Micah, Nahum, Habakkuk, Haggai, Zachariah, and Malachi, who are called the "lesser prophets." The deep sense and religious fire of these men, so far before their age, present a phenomenon that can be explained only by the special action of divine influences. They appear, therefore, as messengers of God, divinely inspired seers; and their preachings and songs were preserved by the Hebrews as the word of God, and among them were rendered more impressive by their connection with poetry and music. Their constant object was the preservation of the doctrines of revelation in their purity: and the richness, originality, and sublimity of their writings still awaken the admiration of those who deny them the character of prophecies.——The *prophecies* in general are supposed to have had a double sense, and a double completion; one sense referred to, which had its accomplishment about the time when the prophets wrote; the other sense had a relation to distant times and events, to which it applies in a somewhat allegorical manner.

PROPHYLAC'TIC, in medicine, an epithet for whatever preserves or defends against disease.

PROPITIA'TION, in theology, an atonement or sacrifice offered to God to assuage his wrath, and render him propitious. Among the Jews there were both ordinary and public sacrifices, as holocausts, &c. offered by way of thanksgiving; and extraordinary ones, offered by particular persons guilty of any crime, by way of *propitiation*. It was also a feast among the Jews, celebrated on the 10th of the month Tisri, in commemoration of the divine pardon proclaimed to their forefathers through Moses, who, as God's agent, remitted the punishment due to the crime of their worshipping the golden calf. The Romish church believe the mass to be a sacrifice of propitiation for the living and the dead. The reformed churches allow of no propitiation but that one offered by Jesus Christ on the cross.

PROPI''TIATORY, or MERCY-SEAT, the cover or lid of the ark or covenant, lined within and without with plates of gold. This is said to have been a type of Christ.

PRO'POLIS, a thick odorous substance having some resemblance to wax, and used by bees to stop the holes and crevices in their hives to prevent the entrance of cold air, &c.

PROPO'RTION, in a general sense, the comparative relation of any one thing to another.——*Proportion*, in mathematics, an equality of ratios. The term proportion is sometimes improperly used for ratio. The ratio between two quantities is expressed by the quotient of one divided by the other: thus, the ratio of 10 to 5 is 2. These two equal ratios constitute a proportion, which is expressed by saying, 10 is to 5 as 16 is to 8; or more concisely, 10 : 5 : : 16 : 8.—— In arithmetic, *proportion* is a rule by which, when three numbers are given, a fourth number is found, which bears the same relation to the third as the second does to the first; or a fourth number is found, bearing the same relation to the second as the first does to the third. The former is called *direct*, and the latter, *inverse proportion*.—— *Harmonical proportion* is when, of three numbers, the first is to the third as the difference of the first and second to the difference of the second and third. Thus, 2. 3. 6. are in harmonical proportion; for 2 is to 6 as 1 to 3.

PROPOSI''TION, in logic, the part of an argument in which some quality, negative or positive, is attributed to a subject; as "man is mortal;" "war is dreadful."—— In mathematics, a statement in terms of either a truth to be demonstrated, or an operation to be performed. It is termed a *problem*, when it is something to be done; and a *theorem*, when it is something to be proved.

PROPRE'FECT, among the Romans, the prefect's lieutenant, or an officer whom the prefect of the prætorium commissioned to do any part of his duty.

PROPRÆTOR, a Roman magistrate, who, having discharged the office of prætor at home, was sent into a province to command there with his former pretorial authority.

PRO RA'TA, in commerce, a term sometimes used by merchants for *in proportion*; as each person must reap the profit or sustain the loss *pro rata* to his interest, that is, in proportion to his stock.

PRO RE NA'TA, according to exigencies or circumstances.

THE FULFILMENT OF SCRIPTURE PROPHECIES AFFORDS THE MOST DECISIVE EVIDENCE OF THE TRUTH OF CHRISTIANITY.

WHEN PROPORTION IS WELL OBSERVED IN PAINTING OR SCULPTURE, NOTHING OFFENDS THE EYE AS EXTRAVAGANT OR UNTRUE.

PROROGA'TION, a term used at the conclusion of a session of parliament, denoting its continuance from one session to another; as an *adjournment* is a continuation of the session from day to day.

PROSCE'NIUM, in the Grecian and Roman theatres, was the stage or place before the scene, where the *pulpitum* stood, into which the actors came from behind the scenes to perform.

PROSCRIP'TION, a punishment in use among the Romans, which had some analogy to our outlawry. The names of the *proscripti*, or persons suffering under proscription, were posted up in tablets at the forum, to the end that they might be brought to justice, a reward being proposed to those who took them, and a punishment to those who concealed them. Under the triumvirate many of the best Roman citizens fell by proscription.

PROSECU'TION, in law, the institution and carrying on a suit in a court of law or equity; or the process of exhibiting formal charges against an offender before a legal tribunal, and pursuing them to final judgment.——The person who institutes and carries on a criminal suit is called the *prosecutor*.

PROS'ELYTE, a new convert to some religion, system, or party. Thus a pagan converted to Christianity is a *proselyte;* and, although the word primarily refers to converts to some religious creed, we speak familiarly of *proselytes* to the theories of Lavoisier, Black, &c.

PROSENNEA'HEDRAL, in crystalography, having nine faces on two adjacent parts of a crystal.

PROS'ODY, that part of grammar which treats of quantity, accent, and the laws of versification.

PROSONOMA'SIA, a figure in rhetoric, wherein allusion is made to the likeness of a sound in several names or words: a kind of pun.

PROSOPOLEP'SY, a premature opinion or prejudice against a person, formed by a view of his external appearance.

PROSOPOPE'IA, a figure in rhetoric, wherein qualities or things inanimate are represented as speaking and acting like animate objects.

PROSPEC'TUS, the outline or plan of a literary work, containing the general subject or design, with the necessary particulars as to the mode of publication. The word *prospectus* has recently been adopted in announcing many undertakings and schemes not purely literary.

PRO'STYLE, in architecture, a range of columns in the front of a temple.

PROTA'SIS, in the ancient drama, the first part of a comic or tragic piece, in which the several members of the *dramatis personæ* are shown, and the subject or plot entered on.

PRO'TEA, in botany, a genus of plants, class 4 *Tetrandria*, order 1 *Monogynia*, so called from the variableness of its fructifications. The species consist of a variety of beautiful and graceful shrubs.

PRO'TEST, a formal and solemn declaration of opinion, given in writing, commonly against some act; as, the *protest* of lords in parliament; or the formal and recorded dissent of a minority against the majority of any public body.——*Protest*, in commerce, a formal declaration made by a notary-public, at the request of the holder of a bill of exchange, for non-acceptance or non-payment of the same, protesting against the drawer and others concerned, for the exchange, charges, damages, and interest. This *protest* is written on a copy of the bill, and notice given to the indorser of the same, by which he becomes liable to pay the amount with charges and interest: also, a similar declaration against the drawer of a note of hand for non-payment to a banking firm, &c. There is also another kind of *protest*, viz. a writing attested by a justice of the peace or consul, drawn by the master of a vessel, stating the severity of the voyage by which the ship has suffered, and showing that the damage was not occasioned by his misconduct or neglect.

PROTESTANT, in church history, a name first given in Germany to those who adhered to the doctrine of Luther: because, in 1529, they protested against a decree of the emperor Charles V. and the diet of Spires, declaring that they appealed to a general council. This name was afterwards extended to the Calvinists, and is now become common to all who belong to the reformed churches. [See REFORMATION.]

PROTESTA'TION, in law, a declaration in pleading, by which the party interposes an oblique allegation or denial of some fact, *protesting* that it does or does not exist.

PRO'TEUS, in mythology, a marine deity, whose distinguishing characteristic was the faculty of assuming different shapes. Hence we denominate one who easily changes his form or principles a *Proteus*.——In natural history, the name *Proteus* has been given to an animal, the classification of which has been much controverted, in consequence of its characteristics being equally those of a lizard and a fish. Sir Humphry Davy, who saw one of these singular animals in a lake, in the beautiful grotto of Maddalena, at Adelsburg, in Illyria, thus describes it: "At first you might suppose it to be a lizard, but it has the motions of a fish. Its head, and the lower part of its body, and its tail, bear a strong resemblance to those of the eel; but it has no fins; and its curious bronchial (or lung-like) organs are not like the gills of fishes; they form a singular vascular (net-like) structure, almost like a crest round the throat, which may be removed without occasioning the death of the animal, who is likewise furnished with lungs. With this double apparatus for supplying air to the blood, it can live either below or above the surface of the water. Its fore feet resemble hands, but they have only three claws or fingers, and are too feeble to be of use in grasping or supporting the weight of the animal; the hinder feet have only two claws or toes, and in the larger specimens are

HOWEVER PROTESTANTS MAY DIFFER, THEY ALL AGREE IN REJECTING A UNIVERSAL, VISIBLE, SUPREME HEAD OF THE CHURCH.

THE HOUSE MAY ADJOURN ITSELF. EACH HOUSE MAY ADJOURN ITSELF.

found so imperfect as to be almost obliterated. It has small points in place of eyes, as if to preserve the analogy of nature. It is of a fleshy whiteness and transparency in its natural state, but when exposed to light, its skin gradually becomes darker, and at last gains an olive tint. Its nasal organs appear large; and it is abundantly furnished with teeth, from which it may be concluded, that it is an animal of prey; yet, in its confined state, it has never been known to eat, and it has been kept alive for many years, by occasionally changing the water in which it was placed."

PROTHON'OTARY, a chief clerk of the king's bench and common pleas.——*Apostolical prothonotaries*, in the church of Rome, are twelve persons constituting a college, who receive the last wills of cardinals, are employed in the proceedings necessary for the canonization of saints, &c.

PRO'TOCOL, the first draught of a deed, contract, or instrument. The word is generally applied to such writings as are of a diplomatic character.

PROTOMARTYR, a term applied to Stephen, the first Christian martyr; and used also for the first sufferer in any cause, religious or political.

PRO'TOPOPE, the imperial confessor, an officer of the holy directing synod, the supreme spiritual court of the Greek church in Russia.

PROTOSUL'PHATE, in chemistry, the combination of sulphuric acid with a protoxyde.

PRO'TOTYPE, an original or model after which any thing is formed.

PROTOX'YDE, in chemistry, a substance combined with oxygen in the first degree.

PROVEDO'RE, a purveyor, or one employed to procure supplies for an army.

PROV'ENCE (or PROV'INCE) ROSE, in botany, one of the most fragrant roses that grows, and of which there are different varieties; as, the white, the blush, and the dwarf provence.

PROV'ERB, a pithy sentence, presenting some striking and familiar image to the mind, which, by the force of association, makes its effect strong and permanent, and thereby often supersedes the necessity of a long discourse or explanation. Proverbs are impartial censors; they take cognizance of the virtues, the vices, and follies, of all classes, without respect of persons. No country is without its proverbs; they are the *vox populi*; but care should of course be taken to select from the mass which abounds, those which are unexceptionable. —In alluding to the free use we had made of them, we remarked, in the Introductory Observations to the Treasury of Knowledge, that "proverbs, however quaintly expressed, contain the essence of some moral truth or practical lesson; they are drawn from real life, and are generally the fruit of philosophy grafted on the stem of experience." Fastidiousness or fashion may fall out with these plain-speaking moralists; our faith in their intrinsic worth remains as firm as ever; and happy shall we be, if through our means, as we have before expressed it, "many of these brief lessons of experience should be engraven on the tablet of the memory, never to be erased."——*Book of Proverbs*, a canonical book of the Old Testament, containing a great variety of wise maxims, practical truths, and excellent rules for the conduct of all classes of men. The first twenty-four chapters are acknowledged to be the genuine work of king Solomon; the five succeeding chapters are a collection of several of his proverbs, made by order of king Hezekiah; and the two last seem to belong to different authors.

PROV'IDENCE, in theology, the care and superintendence which God exercises over his creatures. A belief in divine providence is founded on this rational principle, that the same power which caused a thing to exist is necessary to continue its existence.

PROV'INCE, among the Romans, a country of considerable extent, which, being reduced under their dominion, was new modelled according to the pleasure of the conquerors, subjected to the command of annual governors sent from Rome, and obliged to pay such taxes and contributions as the senate thought fit to demand. These provinces had the appellations of *consular* or *prætorian*, according as they were governed by consuls or prætors.——Among the moderns, a country belonging to a kingdom or state, either by conquest or colonization, usually situated at a distance from the kingdom or state, but more or less dependent on and subject to it. Such are Canada, Nova Scotia, &c. in reference to Great Britain.——In the ecclesiastical division of England, there are two *provinces*, viz. those of Canterbury and York, under the jurisdiction of their respective archbishops.——*Province*, in geography, a division of a kingdom or state, comprising several cities, towns, &c. all under the same government, and usually distinguished by the extent either of the civil or ecclesiastical jurisdiction.

PROVIN'CIALISM, a mode of speech peculiar to a province or district of country remote from the principal country or from the metropolis.

PROVIS'IONAL, provided for present need or for a temporary occasion; as, a *provisional* government, a *provisional* treaty, &c.

PROVI'SO, in law, an article or clause in any statute, agreement, contract, &c. by which a conditional stipulation is introduced.

PRO'VOST, in a general sense, a person who is appointed to preside over or superintend; as, the *provost* of a college.——The *provost-marshal* of an army, is an officer appointed to arrest and secure deserters and other criminals, to hinder the soldiers from pillaging, to regulate weights and measures, &c. There is a similar officer in the royal navy, who has the charge of prisoners taken at sea.

PROW, in nautical language, the beak or pointed cutwater of a galley or xebec: the

upper part is usually furnished with a grating platform. Also the fore-part of a ship.

PROX'IMATE CAUSE, that which immediately precedes and produces the effect, as distinguished from the *remote* or *predisposing* cause.

PROX'Y, the agency of another who acts as a substitute for his principal.—In England, any member of the house of lords may cause another peer to vote for him as his *proxy* in his absence.

PRUNEL'LA, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. The species are perennial.

PRU'NING, in horticulture, the lopping off the superfluous branches of trees, either for improving their appearance or to cause them to bear better fruit.

PRU'NUS, in botany, a genus of plants, class 12 *Icosandria*, order 1 *Monogynia*. The different varieties of the plum, cherry, apricot, &c. belong to this genus.

PRURI'GO, in medicine, a cutaneous disease of which there are many varieties. It is caused by sharp humours which stagnate in the skin and corrode the miliary glands.

PRU'SSIAN BLUE, a pigment of a beautiful blue colour. It is a combination of iron with ferrocyanic acid. Good Prussian blue is known by the following tests: it feels light in the hand, adheres to the tongue, has a dark lively blue colour, and gives a smooth deep trace; it should not effervesce with acids, as when adulterated with chalk; nor become pasty with boiling water, as when adulterated with starch.

PRU'SSIATE, in chemistry, a salt formed by the union of prussic acid with different bases, as the *prussiate* of potash, the *prussiate* of iron, &c.

PRU'SSIC ACID, in chemistry, one of the deadliest poisons known. It is a compound of cyanogen, prussic gas, and hydrogen; hence also called *hydrocyanic acid*.

PRYTANE'UM, in Grecian antiquity, the senate-house in Athens, where the council of the *prytanes* assembled, and where those who had rendered any signal service to the commonwealth were maintained at the public expense.—*Prytaneum* was also a name given to all places sacred to Vesta. Hence those widows called *prytanides*, who took care of the sacred fire, received their name.

PSALM, a divine song or hymn; but chiefly appropriated to the hundred and fifty *Psalms of David*, a canonical book of the Old Testament. Most of these psalms have a particular title, signifying either the name of the author, the person who was to set it to music or sing it, the instrument that was to be used, or the subject and occasion of it. Some have imagined that David was the sole author of the Book of Psalms; but the titles of many of them prove the contrary. Some of the psalms were apparently written by Solomon; a few belong to the reigns of the kings immediately succeeding him; and several to the mournful days of the Babylonish captivity and of the return, especially those headed "for the sons of Korah," most of which are probably by the same author. Finally, a few seem to belong to the age of the Maccabees. The "Psalms of David," whether actually composed by him, or merely of his time, probably constituted an earlier collection, which extended to the seventy-second. But, by whomsoever penned, they are among the highest and sublimest efforts of poetry; and the holy light of revelation, the inspiring belief in the eternal true God, spreads over them a bright splendour, and fills them with a deep and holy fervour.

PSAL'TERY, a musical instrument used by the Hebrews, the true form of which is not now known. That which is now used is a flat triangular instrument, truncated at the top, and strung with thirteen chords of wire.

PSAM'MITE, in mineralogy, a species of micaceous sandstone.

PSEU'DO, a prefix (from the Greek) used in the composition of many words to denote *false*, or *spurious;* as, a *pseudo*-apostle, or false apostle; a *pseudo*-prophet, or false prophet, &c.

PSO'AS, in anatomy, the name of two muscles, distinguished by the epithets *magnus* and *parvus*. The *psoas magnus* is one of the flexor-muscles of the thigh, and arises from the first, second, third, and fourth vertebræ of the loins. The *psoas parvus* is one of the flexor-muscles of the loins, which arises by a slender tendon from the os pubis, where it is joined to the ilium; and is inserted into the side of the upper vertebræ of the loins.

PSEUDO-METAL'LIC, in mineralogy, an epithet for a kind of lustre, which is perceptible only when held towards the light.

PSEUDOMORPH'OUS, an epithet given to a mineral which has received its form from some extraneous cause, not from natural crystalization.

PSEUDO-TINE'A, in entomology, a remarkable species of insect, resembling a moth. It feeds on wax, and being covered with a coat that is impervious to the stings of bees, will sometimes enter a hive and compel its industrious inhabitants to abandon it.

PSEUDO-VOLCA'NO, a volcano that emits smoke and flame, but no lava. A burning mine of coal is sometimes termed *pseudo-volcanic*.

PSIT'TACUS. [See PARROT.]

PSYCHOL'OGY, the doctrine of the nature and properties of the soul; or a treatise thereon.

PTAR'MIGAN, in ornithology, a fowl of the genus *Tetrao*. The colour of its plumage is a pale brown or ash, elegantly marked with dusky spots or minute bars, and the belly and wings white. This bird is occasionally seen on the summits of mountains in Scotland and the north of England.

PTOLEMA'IC SYSTEM, or the system of astronomy invented by Claudius Ptolemæus, a celebrated astronomer and mathematician of Pelusium, in Egypt, who lived

KING DAVID NOT ONLY COMPOSED SACRED SONGS FOR DIVINE WORSHIP, BUT ARRANGED THE MUSIC AND APPOINTED THE SINGERS.

in the beginning of the second century of the Christian era. The *Ptolemaic system* supposes the earth to be fixed in the centre of the universe, and that the sun, moon, planets, and stars revolve around it, from east to west, once in twenty-four hours. This theory was received for ages; astronomers having no notion of any other system but our own, nor of any other world but the earth on which we live. They imagined that all the fixed stars were contained in one concave sphere, and that the *primum mobile* was circumscribed by the empyreal heaven, of a cubic form, which they supposed to be the blissful abode of departed souls. [See ASTRONOMY.]

PTY'ALISM, in medicine, an unnatural or copious flow of saliva; salivation.

PUBES'CENCE, (from *pu'bes*), in botany, the hairy or downy substance growing on certain vegetable productions: hence a *pubescent* plant.

PUB'LICAN, among the Romans, a farmer of the taxes and public revenues, the inferior officers of which class were deemed oppressive; they were consequently regarded by the Jews and other tributary nations with no small degree of detestation.—— Under the modern term of *publicans* are comprised inn-keepers, hotel-keepers, ale-house-keepers, keepers of wine vaults, &c.

PUB'LICIST, a writer on the laws of nations.

PUD'DING-STONE, in chemistry, a term invented by English lapidaries to designate one particular mineral aggregate, consisting of oblong and rounded pebbles of flint, about the size of almonds, imbedded in a hard siliceous cement. The pebbles are usually black, and the cement a light yellowish brown. It is capable of receiving a very high polish, and is used in ornamental works. It is found chiefly in Essex.

PU'GIL, as much as is taken up between the thumb and two fingers.

PU'LEX, in entomology, the flea. [See FLEA.]

PUL'LEY, one of the six mechanical powers, consisting of a small wheel, having a groove around it, and turning on an axis.

PUL'MONARY, or PULMO'NIC, pertaining to the lungs; as, a *pulmonary* disease or consumption.

PULSE, a motion of the blood-vessels, created by the alternate dilatation and contraction of the arteries. It diminishes with age, giving in children from 140 to 100 strokes a minute; but at puberty only 80; and when above 60 years, about 60 *pulsations*.——*Pulse*, in botany, the seed of leguminous plants, as beans, peas, &c.

PU'MA, in zoology, a rapacious quadruped of the genus *Felis*. It is a native of America.

PUM'ICE-STONE, a spongy, vitreous-looking mineral, described as a volcanic production, consisting of parallel fibres of a silky lustre, or a fossil reduced to this state by the action of fire. It is found on the surface of the sea, and on its shores; and is particularly known to be produced by the burning mountains Etna, Vesuvius, and Hecla, among the eruptions of which it is thrown up in great abundance. Pumice is of three kinds, vitreous, common, and porphyritic. It is used for polishing ivory, wood, marble, metals, glass, &c.; as also skins and parchment.

PUMP, an hydraulic engine for raising water by exhausting the incumbent air of a tube or pipe, in consequence of which the water rises in the tube by means of the pressure of the air on the surrounding water. There are various kinds of pumps; as a *forcing pump*, the *air-pump*, &c. A *chain-pump* is a chain equipped with a sufficient number of valves at proper distances, which, working on two wheels, passes down through one tube and returns through another.

PUMP'KIN, or POM'PION, in botany, a plant and its fruits of the genus *Cucurbita*. The pumpkin is a species of gourd, or squash, distinguished from most varieties of the latter by the rounded form of the fruit, which sometimes grows to an enormous size.

PUN, a species of wit which has been gravely pronounced "low;" but surely it is both fastidious and cynical thus to define it. A *pun* is an expression in which two different applications of a word present an odd or ludicrous idea; but it does not necessarily follow that the ideas to which it gives rise shall be *low*, that is, *vulgar*. That they often are so, we admit; but he must be of an incorrigibly saturnine disposition who would declare that all the mirth-inspiring puns which the inimitable Hood draws from his exhaustless quiver are to be accounted *low*. An inveterate punster, who is constantly on the watch for opportunities to torture every expression into a quibble, is not to be tolerated in decent society; but it would be hard indeed if the laws of decorum were so strict, as to debar us from cheering the dull realities of life with an occasional scintillation of wit, even at the hazard of perpetrating a *bad* pun.

PUNCTUA'TION, in grammar, the discriminating use of certain marks adopted to distinguish the clauses of a period, sometimes with reference to the sense, and at others to the grammatical construction. Thus, a full point (.) closes a perfect sentence; a colon (:) indicates an adjunct; a semicolon (;) distinguishes its principal part; and a comma (,) parts subordinate to the semicolon. A sentence, which may include several periods, terminates a branch of the subject or argument. A question is indicated by (?); an exclamation by (!); and it is sometimes convenient to include a collateral circumstance in a parenthesis ( ).—The ancients were altogether unacquainted with *punctuation*.

PUNCTURA'TION, in surgery, the incision of needles in the skin, to relieve the painful diseases of its coats from tension, obstruction, &c.

PUN'DIT, in Hindostan, a learned Brahmin; one versed in the Sanscrit lan-

A STEAM-ENGINE IS ONLY A PUMP, IN WHICH THE FLUID IS MADE TO IMPEL, INSTEAD OF BEING IMPELLED BY, THE PISTON.

THE SIMPLEST AND MOST COMMON KIND OF PUMP IS THE ORDINARY SUCKING PUMP, GENERALLY USED FOR HOUSEHOLD PURPOSES.

guage, and in the science, laws, and religion of that country.

PU'NIC, pertaining to the Carthaginians or their language. Also, a term implying treacherous, deceitful; as *punic* faith.

PUN'ISHMENT, the infliction of pain, or personal suffering according to law, for crimes; intended as an example, to deter others and to correct the offender. The punishment of crimes against the laws is inflicted by the supreme power of the state in virtue of the right of government, vested in the legislature, and belongs only to persons clothed with authority. Some punishments consist of exile or transportation, others in loss of liberty by imprisonment. Locke observes, "the rewards and punishments of another life, which the Almighty has established as the enforcements of his law, are of weight enough to determine the choice against whatever pleasure or pain this life can show."

PU'PA, in entomology, the *chrysalis* or quiescent state of an insect.

PU'PIL, in anatomy, the round aperture in the middle of the iris; the ball or apple of the eye, through which the rays of light pass to the crystaline humour, to be painted on the retina.——*Pupil*, one under the care of an instructor for education and discipline.

PUPIV'EROUS, feeding on the larvæ and crysalides of insects.

PURGA'TION, the act or operation of clearing one's-self of a crime; a mode of trying persons accused of any crime, which was formerly in practice.

PUR'GATORY, a supposed place or state after death, where, according to the Roman Catholics, the souls of the faithful are purified by fire from the sins which they carry with them out of this life, before they are admitted to a state of perfect bliss.

PURIFICA'TION, in religion, the act or operation of cleansing ceremonially, by removing any pollution or defilement. Purification by washing was common to the Hebrews and to Pagans; and the Mohammedans always use it previous to devotion.

PU'RIM, among the Jews, the feasts of lots, instituted to commemorate their deliverance from the machinations of Haman.

PU'RITAN, a name formerly given to the dissenters from the church of England, on account of their professing to follow the pure word of God, in opposition to all traditions and human institutions.

PUR'LIN, in architecture, a piece of timber extending from end to end of a building or roof, across and under the rafters, to support them in the middle.

PURPU'RA, in natural history, a genus of simple shells, having no hinge, formed of one continuous piece, and covered with spines and tubercles. The mouth is small, and approaches to a round figure: the clavicle is short, but the other extremity is usually protended to a considerable length.

PUR'PURE *(purple)*, in heraldry, is one of the five colours of armories, compounded of gules and azure, bordering on violet. It is represented in engraving by diagonal lines from right to left.

PUR'PURIC ACID, in chemistry, an acid produced by the action of nitric upon uric acid.

PUR'SER, in the navy, an officer on board a man-of-war, who takes charge of the provisions, and attends to their preservation and distribution among the officers and crew.

PUR'SUIVANT, in heraldry, the lowest order of officers at arms. The pursuivants are properly attendants on the heralds when they marshal public ceremonies.

PUS, the white or yellowish matter issuing from a sore, which usually precedes the healing, and in such cases is termed healthy or good pus. Examined in a microscope, it is found to consist of two parts, of globules, and a transparent colourless fluid. Its specific gravity is greater than that of water; exposed to heat, it evaporates to dryness, but does not coagulate.

PUTAMIN'EÆ, the twenty-fifth Linnæan natural order of plants, whose fruit is covered with a wooden shell, as the caper, &c.

PUT'CHOCK, the root of a plant that grows abundantly in Sinde. When burned, it yields a fine smoke, and a grateful and diffusive smell. The Chinese beat it into a fine powder, which they burn as incense in the temples of their gods.

PUTREFAC'TION, the decomposition of animal and vegetable substances, the hydrogen creating an offensive smell, and the process tending to excite similar decomposition in other animal bodies; hence we have putrid and contagious fevers from this cause. It follows the acetous fermentation; the oxygen and hydrogen in the compound forming water, the nitrogen is expelled, and the carbon remains, the original substance being thus decomposed into its elements. Every living body, when deprived of life, performs a retrograde process, and becomes decomposed: this is called *fermentation* in vegetables, and *putrefaction* in animals.——*Antiseptic processes.* In curing provisions the ordinary means employed are, drying, smoking, salting, and pickling.—Grain of all kinds, as well as flour, may be preserved for an indefinite length of time, if they be kiln-dried, put up in vessels or chambers free from damp, and excluded from the air. Well-dried grain is not liable to the depredations of insects.—Fruits may be preserved in various ways. Pears, apples, plums, &c., should be gathered in a sound state, altogether free from bruises, and plucked in dry weather before they are fully ripe. One mode of preservation is, to expose them in an airy place to dry a little for eight or ten days, and then to lay them in dry sawdust or chopped straw, spread upon shelves in a cool apartment, so as not to touch each other. Another method consists in surrounding them with fine dry sand in a vessel which should be made air-tight and kept in a cool place.—Herbs, cabbages, &c., may be kept a long time in a cool cellar, provided they are covered with dry sand. Tuberous and other roots are better kept in an airy place, where they may dry a little without

CHARCOAL PLACED WITH MEAT PREVENTS IT FROM BECOMING TAINTED, BY ABSORBING THE DIFFERENT GASES OF PUTREFACTION.

being exposed to the winter's frost.—A partial drying is given to various vegetable juices by evaporating them to the consistence of a syrup, called a *rob*, in which so much of the water is dissipated as to prevent them from running into fermentation. The fruits must be crushed, squeezed in bags to expel the juices, which must then be inspissated either over the naked fire, or on a water or steam bath, in the air or in vacuo: sometimes a small proportion of spices is added, to prevent mouldiness.

PUT'TY, a kind of cement, made of whiting and linseed oil pounded together into a paste, which is used by glaziers in fastening the panes of glass, and also by painters in stopping crevices.

PUZZOLA'NA, in mineralogy, a loose porous volcanic substance or stone.

PYC'NITE, in mineralogy, sometimes called *shorlite*, or *shorlous topaz*. It usually appears in long irregular prisms or cylinders, longitudinally striated, and united in bundles.

PYC'NOSTYLE, in ancient architecture, a building where the columns stand very close to each other; only one diameter and a half of the column being allowed to each intercolumniation.

PYG'MY, an appellation given by the ancients to a fabulous race of beings said to inhabit Thrace, who waged war with the cranes and were destroyed. The word is now used to signify a *dwarf*.

PYL'AGORE, in ancient Greece, a delegate or representative of a city, sent to the Amphictyonic council.

PYLO'RUS, in anatomy, the right or lower orifice of the stomach, which is connected with and opens into the intestines.

PYRAL'LOLITE, a mineral of a greenish colour, recently discovered in Finland. It is both massive and in crystals.

PYR'AMID, a solid body standing on a triangular, square, or polygonal base, and terminating in a vertex or point at the top. Or, in other words, it is formed by the meeting of three or more planes at a point termed the apex.——The *Pyramids of Egypt* are noble monuments of Egyptian grandeur, about forty in number, near Memphis. The largest is 481 feet in height, measured perpendicularly, and the area of its base includes eleven acres.

PYR'AMOID, in geometry, a solid figure, formed by the rotation of a semi-parabola about its base or greatest ordinate.

PYR'ENITE, a mineral of a grayish-black colour, found in the Pyrenees, and considered as a variety of garnet.

PYRETOL'OGY, the doctrine of fevers, or a treatise on their nature, effects, &c.

PYREXI'Æ, in medicine, febrile diseases, the first class in Cullen's nosology.

PYRI'TES, or PYR'ITE, in mineralogy, a genus of inflammable substances composed of iron, in combination with sulphur, which is very extensively diffused. It occurs massive, disseminated, and frequently crystalized.

PYRO-ACE'TIC SPIRIT, in chemistry, a liquid obtained by subjecting to dry distillation the acetates of copper, lead, alkalies, and earths. It is very combustible, and burns with a brilliant flame without smoke. It is used for dissolving the gum-resins with which the bodies of hats are stiffened.

PYROLIG'NITE, in chemistry, a salt formed by the combination of pyroligneous acid with another substance.

PYROLIG'NOUS ACID, in chemistry, an acid obtained from beech and other woods by distillation, which is a liquid of the colour of white wine, of a strong acid and slightly astringent taste. It is an antiseptic, and serves instead of wood smoke (of which it is the principle) for preserving animal substances.

PYROLITH'IC ACID, in chemistry, an acid obtained from the silvery white plates which sublime from uric acid concretions, when distilled in a retort.

PYROL'OGY, the natural history of heat, latent and sensible; or a treatise on that subject. A believer in the doctrine of latent heat is termed a *pyrologist*.

PYROM'ALATE, in chemistry, a compound of malic acid and a salifiable base.

PYROMA'LIC ACID, in chemistry, a substance obtained from the distillation of malic acid.

PYR'OMANCY, divination by fire.

PYROM'ETER, an instrument for measuring high temperatures, or degrees of heat, above those indicated by the mercurial thermometer; particularly the one invented by Mr. Wedgewood for determining the expansion of solid bodies by heat. This instrument is founded on the principle that clay progressively contracts in its dimensions in proportion as it is exposed to higher degrees of heat.

PYROPH'ORUS, in chemistry, a preparation from alum by calcination, which takes fire on exposure to the air.

PYRORTHITE, a scarce mineral, resembling orthite in appearance, but very different from it, for it burns in the flame of the blow-pipe like charcoal, whereas orthite melts.

PYR'OSCOPE, an instrument for measuring the pulsatory motion of the air, or the intensity of heat radiating from a fire.

PYROS'MALITE, a Swedish mineral of a brown or greenish colour, occurring in six-sided prisms, of a lamellar structure.

PYROTAR'TRITE, in chemistry, a salt formed by the combination of pyrotartarous acid with another substance. The *pyrotartarous acid* is obtained by distilling pure tartrite of potash.

PYR'OTECHNY, or PYROTECH'NICS, the science which teaches the management and application of fire in several operations, particularly in the construction of artificial fireworks.

PYR'OXENE, in mineralogy, a class of stones sometimes named *volcanic shorl*. It comprehends many substances of different appearances, but is almost always crystalized.

PYRRHO'NIANS, or PYRR'HONISTS, a sect of ancient philosophers, so called

from Pyrrho, a native of Elis, in Peloponnesus. The opinions of these philosophers, who were also called *sceptics*, terminated in the incomprehensibility of all things, in which they found reason both for affirming and denying; they accordingly seemed to be always in search of truth, without ever acknowledging that they had found it: hence the art of disputing upon all things, without ever going farther than suspending our judgment, is called *pyrrhonism*.

PYTHAGORE'ANS, a sect of ancient philosophers, so called from being the followers of Pythagoras of Samos, who lived in the reign of Tarquin, the last king of Rome.——*Pythagorean system*, the system of astronomy taught by Pythagoras, which was founded on the hypothesis that the sun was a movable sphere situated in the centre, round which the other planets revolved. This is now called the Copernican system, because it was revived by Copernicus. [See ASTRONOMY.]

PYTH'IA, or PYTH'ONESS, in antiquity, the priestess of Apollo, who delivered oracular answers at Delphi, in Greece.——*Pythian Games*, games celebrated at Delphi, every five years in honour of Apollo, as the conqueror of the *Python*, which, according to the mythological history, was a dreadful dragon that sprang from the mud left by the flood of Deucalion.

PYX'IS, in anatomy, a name for the *acetabulum*, or hip-bone.——In the Romish church, a box or case in which is kept the consecrated host.

Q.

Q, the seventeenth letter of the English alphabet, is not to be found either in the Greek, old Latin, or Saxon alphabets; is never sounded alone, but in conjunction with *u*, and never ends any English word. For *qu* in English, the Dutch use *kw*, the Germans *qu*, and the Swedes and the Danes *qv*. It appears, in short, that *q* is precisely *k*, with this difference in use, that *q* is always followed by *u* in English, and *k* is not. As a numeral Q stands for 500, and with a dash over, it stands for 500,000. Q is used as an abbreviation for *question;* it also stands for quantity, or *quantum*, as *q. pl. quantum placit*, as much as you please; and *q. s. quantum sufficit*, *i. e.* as much as is necessary. Among mathematicians, Q. E. D. stands for *quod erat demonstrandum*, that is, which was to be demonstrated; and Q.E.F. *quod erat faciendum*, which was to be done.

QUACHIL'TO, in ornithology, a Brazilian fowl of the moor-hen kind, of a fine black colour streaked and spotted with white. Its voice resembles the crowing of a cock.

QUACK'ERY, the boastful pretensions of an empiric or ignorant quack.

QUADRAGEME, a papal indulgence multiplying remissions by forties.

QUADRAGES'IMA, Lent; so called because it consists of forty days.

QUAD'RANGLE, in geometry, a figure consisting of four sides and four angles.——In architecture, any range of houses or buildings with four sides in the form of a square.

QUAD'RANS, a farthing, or fourth part of a penny. Before the reign of Edward I. the smallest coin was a sterling, or penny, marked with a cross; by means of which a penny might be cut into halves and quarters; till, to avoid the fraud of unequal cuttings, that king coined halfpence and farthings in distinct round pieces.——*Quadrans* was also a division of the Roman *as*.

QUAD'RANT, in geometry, an arc of a circle, containing the fourth part, or ninety degrees, also, the space or area included between this arc and two radii drawn from the centre to each extremity.——*Quadrant*, in astronomy and navigation, an instrument for taking the altitudes of the sun and stars; as also for taking angles in surveying heights, distances, &c. Quadrants are of different forms, but the most esteemed is Hadley's quadrant, which consists of an octant, or the eighth part of a circle, the index, the speculum, two horizontal glasses, two screens, and two sight vanes.——There is also the *gunner's quadrant*, used for elevating and pointing cannon, mortars, &c.——*Quadrant of altitude*, a slip of brass of the length of a quadrant, graduated, and appended to the artificial globe. It serves as a scale in measuring altitudes, azimuths, &c.

QUADRANT'AL, in geometry, a figure which is every way square, like a die.

QUAD'RAT, in printing, a piece of metal cast like the letters, to fill up the blank spaces at the ends of paragraphs, &c.

QUAD'RATE, or QUARTILE, in astrology, an aspect of the heavenly bodies, in which they are distant from each other ninety degrees, or the quarter of a circle.

QUADRAT'IC EQUATIONS, in algebra, those in which the unknown quantity is a square.

QUAD'RATRIX, in geometry, a mechanical line by means of which we can find right lines equal to the circumference of circles or other curves and their several parts.

QUAD'RATURE, in geometry, a fourth part; or a square equal in superficies to a circle.——*Quadrature of the Circle*, the finding some other right lined figure equal to

THE PYTHIA WAS AT FIRST REQUIRED TO BE A YOUNG GIRL; BUT IN LATTER TIMES SHE WAS A WOMAN OF FIFTY YEARS OF AGE.

the area of a circle, or a right line equal to its circumference, a problem which has baffled the mathematicians of all ages. It depends upon the ratio of the diameter to the periphery, which was never yet absolutely determined.

QUADRA'TUS, in anatomy, a term given to several muscles on account of their square figure.

QUAD'REL, in architecture, a kind of artificial stone, made of chalky earth, cut square, and thoroughly dried.

QUADRICAP'SULAR, in botany, having four capsules to a flower; as a *quadricapsular* pericarp.

QUADRIDE'CIMAL, in crystalography, an epithet for a crystal whose prism has four faces and two summits, containing together ten faces.

QUADRIDEN'TATE, in botany, an epithet denoting that there are four teeth on the edge.

QUAD'RIFID, in botany, an epithet designating a leaf or perianth cut into four segments, with lineal sinuses and straight margins.

QUADRI'GA, in antiquity, a car or chariot drawn by four horses. On the reverses of medals, we frequently see the emperor or Victory in a quadriga, holding the reins of the horses; whence these coins are, among numismatologists, called *nummi quadrigati* and *victoriati*.

QUADRIJU'GOUS, in botany, an epithet for a pinnate leaf, with four pairs of leaflets.

QUADRILAT'ERAL, in geometry, a figure whose perimeter consists of four right lines, making four angles; called also a quadrangular figure. The quadrilateral figures are either a parallelogram, trapezium, rectangle, square, rhombus, or rhomboid.

QUADRILL'E, a graceful kind of dance in which eight persons usually join. Also a game of cards played by four persons with forty cards, the four tens, nines, and eights being discarded.

QUAD'RILOBATE, in botany, an epithet for a leaf having four lobes, or divided to the middle into four distinct parts with convex margins.

QUADRILOC'ULAR, in botany, having four cells, as a *quadrilocular* pericarp.

QUADRINO'MIAL, in algebra, a root which consists of four terms or parts.

QUADRIPH'YLLOUS, in botany, having four leaves.

QUADRIRE'MIS, or QUAD'RIREME, a species of the *naves longæ* used by the Romans and also by the Greeks, being a galley with four benches or banks of rowers.

QUADROON', the name given in South America to the offspring of a mulatto woman by a white man.

QUAD'RUMAN, a term for an animal having four hands or limbs that correspond to the hands of a man.

QUAD'RUNE, a kind of gritstone with a calcareous cement.

QUAD'RUPED, any animal having four legs and feet, as a horse, a lion, a dog, &c.

QUADRUPLATO'RES, among the Romans, were informers who, if their information was followed by conviction, had the fourth part of the confiscated goods for their trouble.

QUAD'RUPLE, in commerce, an epithet for whatever is fourfold, or four times any given quantity.

QUÆ'RE, a term expressive of doubt, and calling for further information.

QUÆS'TIO, in logic, the third proposition in a syllogism, which contains the question to be proved.

QUÆS'TOR, an officer among the Romans who had the management of the public revenue or treasury. The *quæstorship* was the first office any person could fill in the commonwealth.

QUAG'MIRE, soft wet land, the surface of which is firm enough to bear a person, but which shakes or yields under the feet.

QUAIL, in ornithology, a bird of the genus *Tetrao* of Linnæus, or grouse kind; but according to the arrangement of Latham, of the genus *Perdix*, in which he comprehends the partridge and quail. They are migratory birds, and much less prolific than the partridge. It has been observed, that in the progress of quails from the northern regions up the Mediterranean, they uniformly, and on a day so exact as to be remarked in the almanacs of the island, stop at Malta. Here they descend, so exhausted by fatigue, and in such prodigious multitudes, that the inhabitants pick them up with facility and in the greatest abundance. After resting one night, those that escape proceed to Syria and Arabia, and spread over Asia and Africa. Quails were formerly much prized for their pugnacious propensities. Quail-fighting was as common at Athens and Rome as cock-fighting has been in modern times, and it is still pursued in some parts of Italy. In the East, and especially in China, they are also pitted against each other, after having been armed with artificial spurs.

QUA'KERS, or FRIENDS, a religious sect which made its first appearance in England during the protectorate of Cromwell. Their founder was George Fox, a native of Drayton, in Leicestershire. He proposed but few articles of faith, insisting chiefly on moral virtue, mutual charity, the love of God, and a deep attention to the inward motions and secret operations of the spirit. He required a plain simple worship, and a religion without ceremonies, making it a principal point to wait in profound silence the directions of the Holy Spirit. Although at first the Quakers were guilty of some extravagancies, these wore off, and they settled into a regular body, professing great austerity of behaviour, a singular probity and uprightness in their dealings, a great frugality at their tables, and a remarkable plainness and simplicity in their dress. Their system, or tenets, are laid down by Robert Barclay (one of their members), in a sensible, well-written "apology," addressed to Charles II. Their principal doctrines are, —that God has given to all men, without exception, supernatural light, which being

obeyed can save them; and that this light is Christ, the true light, which lighteth every man that cometh into the world:—that the Scriptures were indeed given by inspiration, and are preferable to all the other writings in the world; but that they are no more than secondary rules of faith and practice, in subordination to the light or spirit of God, which is the primary rule:—that immediate revelation has not ceased, a measure of the spirit being given to every one:—that all superstitions and ceremonies in religion, of mere human institution, ought to be laid aside:—that in civil society, the saluting one another by pulling off the hat, bending the body, or other humiliating posture, should be abolished; and that the use of the singular pronoun *thou* when addressing one person, instead of the customary *you*, should be strictly adhered to. They further laid it down as a solemn obligation, not to take an oath, encourage war, engage in private contests, nor even carry weapons of defence.—On a most vital question of Christian faith, one of their body has lately thus written: "Although 'Friends' do not call the Holy Scriptures the Word of God, but apply this epithet exclusively to the Lord Jesus Christ, yet they believe that these sacred writings are the *words* of God, written by holy men, as they were moved by the Holy Ghost; that they are profitable for doctrine, for reproof, for correction, for instruction in righteousness, that the man of God may be perfect, thoroughly furnished unto all good works; and that they are able to make wise unto salvation through faith which is in Christ Jesus. They also hold them to be the most perfect and authentic declaration of Christian faith, and the only fit outward standard in all religious controversies; and that whatever, either in doctrine or practice, any profess or do, though under pretence of the guidance of the Holy Spirit, if it be contrary to or inconsistent with, the testimony of the Holy Scriptures, is to be esteemed a delusion and error."—The society is governed by its own code of discipline, which is enacted and supported by meetings of four degrees, for discipline; namely, preparative, monthly, quarterly, and yearly meetings. The preparative digest and prepare the business for the monthly meetings, in which the executive power is principally lodged, subject however to the revision and control of the quarterly meetings, which are subordinate and accountable to it, and subject to its supervision and direction. Its authority is paramount, and it possesses the sole power to make or amend the discipline. There are at present ten yearly meetings, namely, London, Dublin, New England, New York, Philadelphia, Baltimore, Virginia, North Carolina, Ohio, and Indiana, which include a total of about 150,000 members.

QUALIFICATION, any natural endowment, or any acquirement which fits a person for a place, office, or employment.—Also any property or possession which gives a right to exercise the elective franchise, or furnishes one with any legal power or capacity.

QUALITY, in physics, that property belonging to a body which affects our senses in such a manner that it may be distinguished.——*Essential qualities* are such as are necessary to constitute a thing what it is.

QUANTITY, in physics, anything capable of estimation or mensuration, which being compared with another thing of the same nature, may be said to be greater or less, equal or unequal to it.——In common usage, *quantity* is a mass or collection of matter of indeterminate dimensions; thus we say, a *quantity* of earth, a *quantity* of timber, &c. But when we speak of an assemblage of individuals or separate beings, we say a *number;* as a *number* of men, of horses, &c.——In mathematics, anything which can be multiplied, divided, and measured.——In grammar, the measure of a syllable, or that which determines the time in which it is pronounced.

QUANTUM [Lat.], the quantity.——*Quantum meruit* (as much as he deserved), in law, an action grounded on a promise that the defendant would pay to the plaintiff for his service as much as he should deserve.——*Quantum valebat*, an action to recover of the defendant for goods sold, as much as they were worth.

QUARANTINE, the restraint of intercourse to which a ship arriving in port is subjected, on the presumption that she may be infected with a malignant, contagious disease. This is either for forty days, or for any other limited term, according to circumstances. A ship thus situated is said to be *performing quarantine*. The term is derived from the Italian *quaranta*, forty; it being generally supposed that if no infectious disease break out within forty days, or six weeks, no danger need be apprehended from the free admission of the individuals under quarantine. During this period all the goods, clothes, &c. that might be supposed capable of retaining the infection, are subjected to a process of purification, which is a most important part of the quarantine system.——In law, the period of forty days, during which the widow of a man dying possessed of land, has the privilege of remaining in the principal messuage or mansion house.

QUARRY, a pit or cavern where stones for building, &c. are dug from the earth; as a freestone quarry, or a marble quarry.——In falconry, the game which a hawk is pursuing or has killed.——Among hunters, a part of the entrails of the beast taken, given to the hounds.

QUARTAN, in medicine, an intermitting ague that occurs every fourth day.

QUARTATION, in chemistry, the operation by which the quantity of one thing is made equal to the fourth part of another thing.

QUARTER, the fourth part of anything, the fractional expression for which is ¼.——*Quarter*, in weights, is generally used for the fourth part of a hundred weight

THE VENETIANS WERE THE FIRST WHO ENDEAVOURED TO GUARD AGAINST THE PLAGUE, BY OBLIGING SHIPS, &C. TO PERFORM QUARANTINE.

THE YELLOW QUARTZ IS ONE OF THE MOST FREQUENT STONES EMPLOYED FOR WATCH SEALS, AND IS CALLED TOPAZ BY THE JEWELLERS.

THE DUTY ON QUASSIA IS 8l. 17s. 6d. PER CWT. (ABOUT SIX TIMES ITS VALUE), BEING INTENDED BY THE LEGISLATURE TO BE PROHIBITORY.

avoirdupois, or 28lb.——*Quarter*, in astronomy, the fourth part of the moon's period or monthly revolution: thus, from the new moon to the quadrature is the first quarter; from this to full moon, the second quarter, &c. Also, a region in the hemisphere or great circle, or one of the four cardinal points: as the four *quarters* of the globe. ——*Quarter*, in naval architecture, that part of a ship's hull which lies from the steerage to the transom.——On ship-board, *quarters* signifies the stations or places where the officers and men are posted in action.——*Quarters*, in war, is used in various senses, viz. the place allotted to a body of troops to encamp upon: thus they say, the general has extended his *quarters* a great way, &c. *Quarter* also signifies the sparing of men's lives when they are no longer able to defend themselves.——*Head-quarters*, the place where the general of an army resides, which is generally near the centre of the army.——*Winter quarters*, the places in which the troops are lodged during the winter, or their residence in those places. ——*Quarter-deck*, that part of the deck of a ship which extends from the stern to the mainmast.—— *Quarter-gallery*, a sort of balcony on the quarters of a ship.——*Quarter-master*, in the army, an officer whose business is to attend to the quarters of the soldiers, their provisions, &c. In the navy, an officer who assists the mates in their duties, attending the steerage, &c.——*Quarter-master-general*, a military officer whose duty is to mark the marches and encampments of an army, the head quarters, and procure supplies of provisions, forage, &c.

QUARTER DAYS, the days which begin the four quarters of the year, namely, the 25th of March, or Lady Day; the 24th of June, or Midsummer Day; the 29th of September, or Michaelmas Day; and the 25th of December, or Christmas Day.

QUARTERING, in heraldry, partitions of the escutcheon according to the number of coats that are borne in it, or the several divisions that are made when the arms of more than one family are borne by the same person.

QUARTER SES'SIONS, a court of justice, held quarterly, before magistrates of the district to try minor offences by jury, after bills found by a grand jury. The legal powers of these are often very great, but the questions may in many cases be removed to superior courts.

QUARTETTO, in music, Italian for a piece for four voices or four instruments.

QUARTO, in printing and bookbinding, a size made by twice folding a sheet, which then makes four leaves. A book so folded.

QUARTZ, in mineralogy, a species of siliceous stones, of various colours; commonly amorphous, and frequently crystalized. It is abundantly spread throughout the globe, is most comprehensive in its varieties, and the tinges it receives from metals are sufficient to produce those varieties of colour seen in this mineral. Thus, amethyst, or purple quartz, is tinged with a little iron and manganese. Rose quartz, or false ruby, derives its colour from manganese. Avanturine is a beautiful variety of quartz, of a rich brown colour, which, from a peculiarity of texture, appears filled with bright spangles. Small crystals of quartz, tinged with iron, are found in Spain, and have been termed hyacinths of Compostella. Flint, chalcedony, carnelian, onyx, sardonyx, and bloodstone, or heliotrope, and the numerous varieties of agates, are principally composed of quartz, with various materials from which they derive their particular hue.

QUAS, a liquor commonly drank in Russia. It is prepared from pollard, meal, and bread, or from meal and malt, by an acid fermentation.

QUASH (or, as it is common to pronounce it in America, SQUASH), a species of cucurbita or gourd.

QUASH'ING, in law, the overthrowing and annulling of anything: as, to *quash* an indictment.

QUA'SI CON'TRACT, in the civil law, an act which has not the strict form of a contract, but yet has the force of one. Thus, if one person does another's business in his absence, without his procuration, and it has succeeded to the other person's advantage; the one may have an action for what he has disbursed, and the other to make him give an account of his administration; which amounts to a *quasi contract*.

QUAS'SIA, in botany, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*.—— The wood of the root of the *Quassia* tree is intensely bitter, and a decoction from it is used in medicine. Our public brewers have been often charged with using it as a substitute for hops, but it is now prohibited under severe penalties.

QUATREFOIL, in heraldry, four-leaved grass, a frequent bearing in coat armour.

QUA'VER, in music, a measure of time equal to half a crotchet, or an eighth of a semibreve. Also a shake or rapid vibration of the voice.

QUEEN, a woman who holds a crown singly; or, by courtesy, one who is married to a king. The former is distinguished by the title of *queen regnant*; the latter by that of *queen consort*. A queen consort is a subject, though as the wife of the king she enjoys certain prerogatives. The widow of a king is called a *queen dowager*.

QUERCITRON, the bark of the *Quercus nigra*, or yellow oak, a tree growing in North America. It is used in dyeing yellow, the colour being developed from it by a solution of alum.

QUER'CUS, in botany, the oak tree, of which there are twenty-six species, besides varieties. The *Quercus robur* attains to a great size, and is distinguished from other trees by its sending off, horizontally, immense branches. The *Quercus suber*, or cork-tree, is found chiefly in Spain. The exterior bark is the cork, which is taken from the trees every eight or ten years without in the least injuring them.

QUES'TIONIST, a candidate for a bachelor's degree at Cambridge.

QUEST'-MEN, in law, persons chosen to inquire into abuses and misdemeanours, especially such as relate to weights and measures.

QUES'TUS, in law, land which does not descend by hereditary right, but is acquired by one's own labour and industry.

QUICK-LIME, any calcareous substance deprived of its fixed or carbonic air, or an earthy substance calcined; as, chalk, limestone, oyster-shells, &c.

QUICK-MATCH, a combustible preparation used by artillerymen; being formed of cotton strands dipped in a boiling composition of vinegar, saltpetre, and mealed powder.

QUICK'SILVER, a metal so remarkable for its fluidity, as to be congealable only with the intense cold indicated by 39° or 40° below zero on Fahrenheit's thermometer. [See MERCURY.]

QUID PRO QUO, in law, an equivalent, or the mutual consideration and reciprocal performance of both parties to a contract.

QUI'ETISTS, in ecclesiastical history, a sect of mystics, originated by Molino, a Spanish priest, who maintained that religion consists in the internal rest and meditation of the mind, wholly employed in contemplating God and submitting to his will. This doctrine was termed *quietism*. Rarely as these precepts of quietism can be put in practice, because they comport neither with the wants of human nature nor the demands of our social condition, they have, nevertheless, frequently re-appeared in the mysticisms of later sects.

QUINCE, in botany, the fruit of the *Pyrus cydonia*, so named from Cydonia, a own of Crete, famous for abounding with his fruit. It is now cultivated throughout Europe, and when boiled and eaten with ugar, or made into marmalade, is much steemed.

QUIN'CUNX, in gardening, the term for method of planting trees, which are disosed in a square (one at each corner, with ne in the centre), thus : · : This repeated definitely forms a regular grove or wood, hich viewed by an angle of the square or arallelogram, presents equal rows or padlel alleys.——In astrology, an aspect in hich the planets are five degrees distant om each other.

QUINDEC'AGON, in geometry, a plain gure with fifteen sides and fifteen angles.

QUINDE'CEMVIR, or QUINDECEM'IRI, in Roman antiquity, a college of fifen magistrates, whose business it was to eside over the sacrifices. They were also e interpreters of the Sibyl's books; which, owever, they never consulted but by an exess order of the senate.

QUINI'NA, or QUINI'NE, a preparaon from Peruvian bark, which is highly teemed and used to a great extent in the ateria medica. *Quinina* and *cinchonina* : two vegetable alkalies extracted from ruvian bark or cinchona: the pale bark ntaining most cinchonina, and the yelr bark most quinina. The extensive sale and high price of sulphate of quinine, have given rise to many modes of adulteration, the detection of which belongs to the practical chemist.

QUINQUAGENA'RIUS, in Roman antiquity, an officer who had the command of fifty men.

QUINQUAGES'IMA, or Shrove Sunday, so called as being about the fiftieth day before Easter.

QUINQUA'TRIA, in Roman antiquity, festivals celebrated in honour of Minerva with much the same ceremonies as the Panathenæa were at Athens.

QUINQUENNA'LIA, in antiquity, Roman games that were celebrated every five years.

QUIN'QUIREME, in antiquity, a galley having five seats or rows of oars.

QUIN'SEY, or QUIN'SY, in medicine, a species of angina, or inflammation of the throat, with difficult respiration, &c.

QUINTES'SENCE, in chemistry, a preparation consisting of the essential oil of a vegetable substance, mixed and incorporated with spirit of wine.——In a more general sense, an extract from anything, containing its virtues or most essential part in a small quantity.

QUIN'TILE, in astronomy, the aspect of planets when distant from each other the fifth part of the zodiac, or 72 degrees.

QUINTILIS, in chronology, the month of July, so called because it was the fifth month of Romulus's year, which began in March. It received the name of July from Marc Antony, in honour of Julius Cæsar, who reformed the calendar.

QUIN'TIN, in ancient martial sports, an upright post on the top of which turned a cross piece, on one end of which was fixed a broad board, and on the other a sand-bag. The play was to tilt or ride against the broad end with a lance, and pass without being struck by the sand-bag behind.

QUIRINA'LIA, in antiquity, a feast celebrated among the Romans in honour of Romulus, who was called *Quirinus*. These feasts were held on the 13th of the calends of March.

QUIRI'TES, in antiquity, a name given to the populace of Rome, as distinguished from the soldiery.

QUI-TAM, in law, a term for an action brought, or information exhibited, at the suit of the king, on a penal statute, wherein half the penalty is directed to fall to the suer or informer.

QUIT'RENT, in law, a small rent payable by the tenants of most manors, whereby they go quit and free from all other services.

QUIT'TER-BONE, in farriery, a hard round swelling on the coronet, between the heel and the quarter, usually on the inside of the foot.

QUOAD HOC, a term used frequently in law reports to signify that "as to the thing named," the law is so, &c.

QUOD PERMIT'TAT, in law, a writ for the heir of him that is disseized of common of pasture, against the heirs of the disseizor.

QUOIN, or COIN, on shipboard, a wedge fastened on the deck close to the breech of the carriage of a gun, to keep it firm up to the ship's side, &c.——*Quoins*, in architecture, the corners of brick or stone walls. The word is particularly used for the stones in the corners of brick-buildings. When these stand out beyond the brick-work, their edges being chamfered off, they are called *rustic* quoins.

QUOITS, a kind of exercise or game very similar to the one known among the ancients under the name of *discus*. It consists in pitching or throwing a flat iron ring or kind of horse-shoe at a fixed object.

QUO JU'RE, in law, a writ that lies for a person who has lands wherein another claims common of pasture time out of mind; and is brought in order to compel the person to show by what title he challenges it.

QUO'RUM, in law, a word frequently mentioned in our statutes, and in commissions both of justices of the peace and others. By it is generally understood, such a number of justices as are competent by law to transact business. The term is derived from the words of the commission, *quorum* A. B. *unum esse volumus*. For example, where a commission is directed to seven persons, or to any three of them, whereof A. B. and C. D. are to be two, these are said to be of the *quorum*, because the rest cannot proceed without them.

QUO'TA, in law, a share or contribution.

QUOTID'IAN, in medicine, an intermitting fever, or ague, of which the paroxysm or fit returns every day.

QUO'TIENT, in arithmetic, the number which arises, by dividing the dividend by the divisor; or, in other words, the number resulting from the division of one number by another.

QUO-WARRAN'TO, in law, the name of a writ which lies against any particular persons, or bodies politic or corporate, who usurp or make an improper use of any franchise or liberty, in order to oblige them to show by what right and title they hold or claim such franchise.

R.

R, the eighteenth letter of our alphabet, is numbered among the liquids and semivowels, and is sometimes called the *canine* letter. Its sound is formed by a guttural extrusion of the breath, which in some words is through the mouth, with a sort of quivering motion or slight jar of the tongue. In words which we have received from the Greek language we follow the Latins, who wrote *h* after *r*, as the representative of the aspirated sound with which this letter was pronounced by the Greeks; as in *rhapsody, rhetoric, &c.;* otherwise it is always followed by a vowel at the beginning of words and syllables. As an abbreviation, R in English, stands for *rex* and *regina;* as George R; Victoria R. In the notes of the ancients, R. or RO. stands for *Roma;* R.C. *Romana civitas;* R.G.C. *rei gerendæ causa;* R.F.E.D. *recte factum et dictum;* RG.F. *regis filius;* R.P. *respublica*, or *Romani principes*. As a numeral R, in Latin authors, stands for 80, and with a dash over it, for 80,000.

RAB'BET, in carpentry, a deep groove or channel cut in a piece of timber longitudinally, to receive the edge of a plank, or the ends of several planks, that are to be fastened therein.——*Rabbeting*, the paring down the edge, or cutting channels or grooves in boards, for the purpose of lapping one over the other. In ship-carpentry, it signifies the letting in of the planks of the ship into the keel.

RAB'BI, or RAB'BIN, a title assumed by the pharisees and doctors of the law among the Jews, which literally signifies master or lord. There were several gradations before they arrived at the dignity of a rabbin; but it does not appear that there was any fixed age or previous examination necessary; when, however, a man had distinguished himself by his skill in the written and oral law, and passed through the subordinate degrees, he was saluted a rabbin by the public voice. In their schools the rabbins sat upon raised chairs, and their scholars at their feet: thus St. Paul is said to have studied at the feet of Gamaliel. Such of the doctors as studied the letter or text of scripture were called *caraites*, those who studied the cabballa, *cabbalists*, and those whose study was in the traditions or oral law, were called *rabbinists*. The customary duty of the *rabbins*, in general, was to pray, preach, and interpret the law in the synagogues. Among the modern Jews, the learned men retain no other title than that of *rabbi;* they have great respect paid them, have the first places or seats in their synagogues, determine all matters of controversy, and frequently pronounce upon civil affairs.

RAB'BIT, in zoology, the *Lepus cuniculus* of Linnæus, a well-known animal of the hare kind, which feeds on grass or other herbage and grain, and burrows in the earth. It is a very prolific animal, and is kept in warrens for the sake of its flesh.

RAB'DOMANCY, in antiquity, a sort of divination by means of rods, according to their manner of falling when they were set up.

RA'CA, a Syriac word signifying empty, foolish, beggarly; a term of extreme con-

tempt. The Jews used to pronounce the word with certain gestures of indignation, as spitting, turning away the head, &c. Our Saviour (Matth. v. 22.) intimates that whosoever should call his neighbour *raca*, should be condemned by the council of the Sanhedrim.

RACCOON', in zoology, an American quadruped of the genus *Ursus*. It is somewhat of the shape of a beaver, with hair like that of a fox; its head, too, resembles the fox, except that the ears are shorter, roundish, and naked; its tail is longer than its body, and not unlike that of a cat, with annular streaks of different colours. This animal lodges in a hollow tree, and feeds on vegetables: its fur is deemed valuable, and its flesh is esteemed a palatable food.

RACE, the lineage of a family, or the series of descendants indefinitely continued. All mankind are called the *race* of Adam; the Israelites are of the *race* of Abraham; and in like manner, we say, the Capetine or the Carlovingian *race* of kings, &c.

RA"CEME, in botany, a species of inflorescence, consisting of a peduncle with short lateral branches. It may be either simple or compound, naked or leafy, &c. ——*Racemous*, growing in clusters. *Racemiferous*, bearing racemes or clusters; as, the racemiferous fig-tree.

RACES, in the usual acceptation, signify public trials of the speed of horses. They were customary in England in very early times, and are mentioned by Fitz-Stephen in the reign of Henry II. In queen Elizabeth's time they appear to have been carried to such excess as to have injured the fortunes of the nobility. At that time, however, the matches were private, and gentlemen rode their own horses. In the reign of James I. public races were established; but it was not till after the restoration of Charles II. that it was particularly encouraged by royalty, when "his majesty's plate," a cup or bowl worth 100 guineas was first given, in lieu of which that sum of money is now paid. The usual trial of speed, in English racing, is a single mile; of continuance or bottom, four miles; but the true test of thorough blood in a racer is continuance. There is a great deal of fraud practised in the whole business of racing; and, as in every other species of gambling, the wealthy who addict themselves to the sport, generally in the end become the victims of a host of black-legs and their confederate jockies.—There are few amusements more exhilarating; and as the period of the races generally serves as a rendezvous for persons of rank and fashion, the scene, independent of the sport itself, is one of gaiety and pleasure.——Among the ancients, horse-races were performed either by single horses, or by two horses, on one of which they performed the race, and leaped upon the other at the goal. Chariot-races were performed by one, two, three, four, five, or more horses joined together in chariots. How great soever the number of horses might be, they were all ranged abreast, or in one front, being coupled together in pairs. Clisthenes, the Sicyonian, introduced the custom of coupling the two middle horses only; the rest he governed by reins. The principal part of a charioteer's skill consisted in dexterously avoiding the *metæ*, or goals; a failure in this point overturned his chariot, which was an event that was attended not only with imminent danger, but also with great disgrace. We read that Nero, at the Olympic games, made use of a *decemjugis*, or chariot drawn by ten horses. He also used camels in the Roman circus; and Heliogabalus introduced elephants instead of horses. The most remarkable circumstance relating to the Roman chariot-races, was the factions of the charioteers, which divided into parties the whole city of Rome.

RACHI'TIS, in medicine, the rickets [which see].

RACK, a horrid engine of torture, furnished with pullies and cords, &c. for extorting confession from criminals or suspected persons. Its use is entirely unknown in free countries.

RACK'ET, a bat to strike the ball with at tennis, usually consisting of a net-work of catgut strained very tight in a circle of wood, with a handle.

RA'DIAL, in anatomy, pertaining to the *radius* or fore-arm of the human body; as, the *radial* artery or nerve. The *radial muscles* are two muscles of the fore-arm, one of which bends the wrist, the other extends it.——*Radial curves*, in geometry, curves of the spiral kind, whose ordinates all terminate in the centre of the including circle, and appear like so many semi-diameters.

RA'DIATE, or RA'DIATED, in botany, are such flowers as have several semi-floscules set round a disk, in form of a radiant star: those which have no such rays are called *discous* flowers.

RADIA'TION, the act of a body emitting or diffusing rays of light all round, as from a centre. Though every visible body be radiating, yet it need not be luminous in itself, but only illuminated; that is, it may diffuse rays received from a luminous body, as well as emit those of its own.——*Radiating point*, in optics, any point of a visible object from whence rays proceed.

RAD'ICAL, in general, something that serves as a basis or foundation; as, a *radical* truth or error.——In grammar, the appellation *radical* is given to primitive words, in contradistinction to compounds and derivatives.——*Radical*, in chemistry, a simple constituent part of a substance, which is incapable of decomposition. Also, the distinguishing part of an acid, that which unites with oxygen, and is common to all acids.——*Radical quantities*, in algebra, quantities whose roots may be accurately expressed in numbers.——*Radicals*, in politics, an epithet applied to the ultra-democrats of Great Britain.

RADICA'TION, in botany, the disposition of a root of a plant with respect to the ascending and descending caudex and the radicles.

THE VISIBLE RADIATIONS FROM HEATED BODIES ARE REFLECTED LIKE LIGHT, BUT THEY DO NOT PASS THROUGH TRANSPARENT BODIES.

RAD'ICLE, in botany, that part of the seed of a plant which, upon vegetating, becomes the root.

RADIOM'ETER, an instrument for taking the altitudes of celestial bodies.

RAD'ISH, in botany, a plant of the genus *Raphanus*, which is eaten raw.

RA'DIUS, in geometry, a right line extending from the centre of a circle to the periphery, and hence the semidiameter of the circle.——In trigonometry, the *radius* is the sine of 90 degrees.——In anatomy, the exterior bone of the fore-arm, descending along with the ulna from the elbow to the wrist.——In botany, the outer part or circumference of a compound radiate flower, or radiated discous flower.

RA'DIUS-VEC'TOR, in astronomy, a line drawn from the sun to the orbit of a planet, the orbit being varied in distance by the varied re-action of the planet to the uniform actions of the sun.

RA'DIX, in etymology, a primitive word from which spring other words.——In algebra, *radix* sometimes denotes the root of a finite expression, from which a series is derived.——In logarithms, that number whose logarithm is unity.——In botany, a root, or that organ of a vegetable through which it draws its nourishment. [See Botany.]

RAFT, a sort of float consisting of boards fastened together side by side, a mode of conveying timber by water.

RAFT'ERS, the pieces of timber extending from the plate of a building, so as to meet in an angle at the top, and form the roof.

RAGOUT (pron. *ragoo'*), a high seasoned dish, or a compound in cookery, for exciting a languid appetite.

RAG'STONE, in mineralogy, a rough stone of the siliceous kind. It is of a gray colour and fibrous texture, the laminæ consisting of a congeries of coarse grains. It is used for a whetstone without oil or water, for sharpening coarse cutting tools.

RAGU'LED, in heraldry, an epithet for any bearing that is ragged or uneven, like the trunk or limb of a tree lopped of its branches, so that only the stumps are seen.

RAIL, in ornithology, a bird of the genus *Rallus*, consisting of many species. The greater part of them inhabit the margins of rivers and ponds covered with marshy and aquatic plants.——Also, a name given to pieces of scantling used in making fences; or the pieces into which balusters are inserted. But the word *railing* is more generally used.

RAILWAYS, or RAILROADS. Among the most wonderful features which mark the progress of science in the nineteenth century, is the vast and increasing extent of the substitution of mechanical for animal power—ingenious in most operations, exciting our admiration in many, but excelling all in its application to the purposes of travelling. It was in 1801 when the first railway act received the sanction of the British legislature; we allude to the incorporation of the Surrey Iron Railway Company—a trifling affair indeed, viewed, as we needs must view it now, in comparison with the prodigious works around us; for it extended only from Wandsworth to Croydon, and was merely applicable for the carriage of coals, lime, &c., the moving power being from horses alone. But a new era was approaching. The civilized nations had no sooner sheathed the sword of war, than they exerted their energies in the cultivation of the arts of peace, and in the advancement of science. With giant strides work after work proceeded; the elements, so to speak, were made subservient to man's controlling power; till at length the ponderous machines, impelled by the irresistible force of steam, whirled along with a velocity which defies competition, and almost mocks the sight.—The species of rail first employed was a broad surface of cast iron, sufficient to support the rim of a common cart or carriage; these are called plate or *tram* rails, and such rails are very useful, where the carriages that pass over them have occasionally to traverse common roads. But another species of rail is now universally employed, where the carriages have to pass only over the railway; these are called *edge* rails, and are distinguished from the former by being much narrower on the upper surface. On the edge railway very narrow wheels are used on the carriages, the breadth of the rail not in general exceeding two inches, and the carriage is kept on the way by means of flanges on the outer part of the rim of the wheel. These flanges ought never to touch the rail on account of the great resistance they cause; and a better plan is now adopted in forming the carriage wheels bevelled on the rim, so that the exterior diameter is less than the interior. The rails are fashioned in bars commonly three feet in length, fastened at each end upon the sleepers. They are usually of the fish-bellied shape, thicker in the middle than at the ends; but although theoretically this may appear the best fitted for the purpose, experience has shown that a straight rail is equally strong, and has this great advantage, that the cost is much less from the greater ease in making. Cast iron rails are at first much cheaper than malleable iron ones, but not in the end; for not only are malleable rails more durable than those made of cast iron, but malleable rails when in use are less susceptible to the deteriorating action of the atmosphere than the same rails would be if unused.——*Inclined planes.* Where the inclination of the road is greater than that for which the ordinary power is calculated, the ascent must be effected by means of an additional power, the amount of which can be readily computed, since, in those parts, no additional friction of the cars or wheels is to be provided for, and only the additional resistance arising from gravity is to be overcome. If, for instance, the additional inclination is one in ninety-six, or fifty-five feet in a mile, the additional power must be to the weight as one to ninety-six, or as fifty-five to the number of feet in a

mile, namely, 5280. In descending planes, so much inclined that the gravity would move the carriages too rapidly for safety, the velocity is checked by means of a break, which consists of a piece of wood of the same curvature as the rim of a set of the wheels, upon which the break is pressed by means of a lever, so adjusted as to be within reach of the conductor, in his position on the carriage.——*Power.* Where the road is sufficiently and uniformly descending in one direction, gravity may be relied upon as a motive power in that direction; but on railroads generally, some other power must be resorted to in each direction. It was at first a great question as to whether stationary or locomotive steam-engines should be used, but after various experiments locomotives were preferred; and the opinion in favour of this kind of power on roads of which the inclination does not exceed about thirty feet in a mile, has become pretty fully established. Stationary power can be used to advantage only on lines of very great transportation, as the expense is necessarily very great, and almost the same whether the transportation be greater or less. Another objection to the use of stationary power is, that its interruption, in any part, breaks up the line for the time, which is not necessarily the case with a locomotive. The alternative, accordingly, is between the use of locomotive steam-engines or horses; and the fact seems well established, that where the transportation is sufficient for supplying adequate loads for locomotive engines, and where the road is so constructed that they can be advantageously used, and where fuel is not exceedingly expensive, they afford much the most economical motive power.——It would be futile in a work of this nature to attempt any thing more than a cursory notice of so vast a subject; several works being regularly published for the express purpose of affording all the necessary information. We will therefore just place before the reader a statement or two that lie in our way, by which he will be enabled to form his own opinion of the magnitude and importance of railways in general:——*The London and Birmingham Railway* was opened throughout on September 17, 1838: the first train completing the distance, 112¼ miles, in four hours and fourteen minutes; and the second train, carrying 200 passengers, in about six hours. The entire cost of this railway is about 5,000,000*l.*; one of its most laborious works is the Kilsby Tunnel, 2398 yards in length, the expense of which is stated at 400,000*l.* With the exception of the inclined plane between Euston Grove and Camden Town, the least favourable inclination is equal to only one in 330, or sixteen feet in a mile; only about thirteen miles of the road are perfectly level, the remainder forming a series of inclined planes; and the station at Birmingham is 250 feet above the level of the London station. The cost of the iron rails is stated at 460,000*l.*; their weight, 70,000 tons; cost of stone blocks, 180,000*l.*; weight, 152,460 tons: total excavations, 15,000,000 cubic yards.——The following statement of the total number of passengers conveyed on various lines of railway in the year 1838 is taken from the second report of the committee of the House of Commons:—Liverpool and Manchester, 609,336; Grand Junction, 445,290; London and Birmingham, 459,385; London and Greenwich, 1,544,266; Newcastle and Carlisle, 196,051; Stockton and Darlington, 228,946; Dundee and Newtyle, 59,682; Durham and Sunderland, 77,429; Edinburgh and Dalkeith, 299,201; Garnkirk and Glasgow, 128,373; Leeds and Selby, 90,637; Leicester and Swannington, 23,053; Paisley and Renfrew, 143,180; Dublin and Kingstown, 1,141,679; Bolton and Leigh, 86,320. We ought not, perhaps, to close this article without observing, that not only in this country, but in France, Belgium, Italy, Germany, nay, over the whole of the European continent, and on an infinitely more extended scale in the United States of America, are railroads every where in progress. With regard to the latter, many circumstances conspire to assist in the construction of these roads—the alluvial plains, which often present a dead level for a hundred miles together, the great plenty of timber, and, more than all, the non-appropriation of the ground, which enables the projectors to buy it for a trifle, and, in the majority of cases, to get it for nothing. "They have pushed these roads (says a writer in the Leicester Mercury, and copied into the Mechanic's Magazine) into the very bosom of the wilderness. Like the military roads of the Romans, they hold steadily and straight on through plain and morass, through lane, forest, and river, and across the rugged Alleghanies, and the wild woods that skirt the banks of the Mohawk; and where, a few years since, an Indian hunter could scarcely force his way, you now dash along at the fearful velocity of twenty miles an hour. Many of these roads have been finished for less than 5000 dollars a mile; the very best of them, made of English iron, and laid down on stone sleepers, have been completed for 29,000 dollars a mile, or about 6000*l.*, which is only one-seventh the cost of the Liverpool and Manchester. The same method and dexterity which marks their steam-boat travelling, is also seen here: the engines are nearly all of American construction, having superseded those imported from England, and the engineers seem to have them under better control. There is certainly no unnecessary expense about these railroads. The sleepers are often not filled up, and frequently, in passing a deep chasm, or rushing torrent, the bridge is only just wide enough for the rails. Most of these railroads are at present single tracks, which occasion delay when trains meet. The carriages are larger than ours, they are sometimes fifty feet long, and have a deck with verandas. I have often remarked, that American engineers seem more dextrous than English. I have seen a train going seventeen miles an hour stopped in forty

BY MEANS OF RAILWAYS THE PROVINCIAL TOWNS WILL IN TIME BECOME LIKE SO MANY SUBURBS OF THE METROPOLIS.

IN HIGH-PRESSURE ENGINES THE STEAM IS NOT CONDENSED; IN LOW-PRESSURE ENGINES IT IS CONDENSED IN A SEPARATE VESSEL.

yards. The engine carries a large shovel in front, which removes any obstacle lying on the rail. Riding on the engines of a Washington train at night, I saw a cow lying on the rails; before I could exclaim, we were upon her, and I expected a shock, instead of which, the shovel picked her up, carried her a few yards, and then threw her to the roadside, out of the way. I took many opportunities of riding on the engines—wood is burned in most of them—anthracite coal in few. Their cylinders are mostly horizontal, like our own; but I saw several where the cylinders were vertical. There is a fine road from Albany, on the Hudson, to Utica, ninety miles. This road, in a few months, will reach to Buffalo, on the Lake Erie, and then a traveller may pass from New York to Niagara, in twenty-four hours. There are railroads throughout all the New England States to every town of importance, and some thousand miles in progress in the south and west. There is the least improvement in the slave states. There is no country where you can cross such vast tracts in so short a time as in America, and the facilities are every day increasing. The Ohio already joins the Delaware, by a railroad 350 miles long, and in a few years a traveller may be able to pass from the gulf of Newfoundland to the gulf of Mexico—from icebergs to orange-groves—in six days."

RAILWAY, Atmospheric or Pneumatic.—This invention is yet in its infancy; nor has it been satisfactorily proved that it can be brought to such perfection as was at first imagined, the opinions of scientific men being at present much divided on the subject. A great dispute has also arisen as to the priority and right of invention to this means of railway transit; Mr. Pinkus and Mr. Vallance contending that they brought it to useful working order before Mr. Clegg and his co-patentee Mr. Samuda. The whole secret of the pneumatic system of railway is in the means by which the power obtainable within a close tube or tunnel, by the rarefaction of the inclosed column of air, is communicated to a train of carriages on the outside throughout its longitudinal extent, and in the combination necessary to render it effective, the principal feature in which is a perpetually shifting valve. The body of the railway is a cast-iron cylinder, with horizontal rails diametrically opposite to each other, and forming ledges on the sides of the cylinder. The quantity of iron in a given length, and the consequent cost of the cylinders, are ascertainable to a fraction, and the cylinders may be cast in substance as light as possible, since any required degree of strength may be given to the construction by ribs or rings upon the lower semi-circumference at long intervals. The maintenance of fixed steam-engines, such as are to be used as prime movers, or to work the air-pumps, at stations along the line, is a matter of every-day experience; and the working of the blowing-machines, used in blasting iron, furnishes data for the working of air-pumps. The invention is not a recent novelty in the history of practical philosophy, but in all the attempts to render it practicable, the inventors found a difficulty in contriving such an aperture for the transit of the connecting rods or bars as should not destroy the vacuum within the tube by affording an opening for the rushing in of the external air in such places and in such a manner as to destroy the whole principle and power of the vacuum. In 1836, Mr. Pinkus thought he had effected this object; his method is said to have consisted of a pipe, 50 inches in diameter, with a slit or groove in the upper surface; the groove was to be closed by laying a rope in it, a piston was to move in the tube to which the rods or bars connecting it with the carriage were attached, wheels were attached to the bar or rod which lifted up the rope as the piston passed beneath it, and then came another wheel behind the bar or rod which forced down the rope into its former place, after the passage of the bar had taken place. The defect here is said to have been, that the rope could not be sufficiently forced down so as to make the aperture air-tight. The present patentees assert that they have contrived an effectual method of closing the aperture, so as to make it air-tight after the passage of the connecting rods, and thus render the application of the vacuum principle of practical utility to railroad conveyance. Their contrivance is this:—A pipe of nine inches is used for the transit of the piston; along the top of it is an aperture. To close the aperture there is a strip of leather, strengthened by plates of iron fixed like a lid, by being attached on one side to the pipe, while the other side falls into a groove, filled with a composition of oil and wax. Wheels are attached for opening and closing the valve, and, what is completely a new feature, a heated upper rod passes over the composition after the valve has been closed, melts the composition, soldering down the edge of the valve or lid to the groove, and sealing the tube. Thus, it will be seen that the desideratum so long sought in vain, viz. the connecting the piston in the tube with the carriage above it in such a manner as to prevent the vacuum in the tube from being destroyed by the rush of external air, has been accomplished. It is proposed to divide the line of pneumatic railway into sections of from three to five miles in length, according to the acclivities to be worked, since the steeper acclivity will require a higher degree of rarefaction to be obtained within the same time. High-pressure steam-engines, of sufficient power, at each of the stations which limit the sections, will work air-pumps of sufficient capacity to produce the required degree of rarefaction to overcome the resistance of the load to be drawn within a given time; and the resistance being overcome, the train will, of course, proceed with a velocity equal to that with which the pistons of the air-pumps are worked. We have witnessed

THE TIME REQUIRED TO CONVERT WATER INTO STEAM, IS SIX TIMES GREATER THAN TO RAISE IT FROM THE FREEZING TO THE BOILING POINT.

several experiments of the atmospheric railway on the line of railroad which runs from the Uxbridge road, near Shepherd's Bush, across Wormwood Scrubs to the line of the Great Western Railroad; but that it will ever compete with its noisy and terrific rival is more than we will venture to predict.

RAIN, in meteorology, vapour precipitated upon the earth in the form of drops of water. *Rain*, is the return to the earth, in condensed drops, of the aqueous vapours which are raised in the atmosphere by the sun and wind; the condensation being occasioned by a change in the general temperature, by a collision produced by contrary currents, or by a cloud passing into a cold stratum of air. The power of the air to hold water in solution does not increase in the same ratio with the increase of its temperature, but in a much higher ratio. Hence, when two masses of air, saturated with moisture, and of different temperatures, are mixed, the resulting compound is not capable of holding the whole water in solution, and a part is, in consequence, precipitated as *rain*. As the whole atmosphere, when saturated, is calculated not to hold in solution more water than would form a sheet five inches in depth, while the mean annual deposit of rain and dew is probably from 35 to 40 inches, it is obvious that the supply of atmospheric moisture must be renewed many times in the course of a year. [See Air, Fog, &c.] The quantity of rain precipitated from the atmosphere depends upon a variety of circumstances,—on the previous dampness of the unmixed portions of the fluid,—their difference of heat,—the elevation of their mean temperature,—and the extent of the combination which takes place. When the deposition is slow, the very minute aqueous globules remain suspended, and form clouds; but if it be rapid and copious, those particles conglomerate, and produce, according to the temperature of the medium through which they descend, rain, mist, snow, or hail.

RAIN'BOW, in meteorology, an arch or semicircle exhibited in a rainy sky, and some similar situations, opposite to the sun, adorned with the prismatic colours, and formed by the refraction of the rays of light in spherical drops of water. The inner bow is produced by a refraction at the entrance of the drop, a reflection from its back, and a refraction at its exit, or by two refractions and one reflection. The outer bow by two refractions and two reflections within the drop; and, as much of the light is dispersed by the two reflections, so the outer bow is fainter than the inner bow. As all the drops in a shower are affected at the same time, so all the colours of light are visible anywhere to a spectator whose back is to the sun, in circles which are from 54 to 51 degrees and from 42 to 40 degrees from the eye; but in the two bows the colours are reversed. The two bows may be imitated by small glass globes of water placed within the above angles from the eye, or by throwing up water with an engine. A line passing from the sun through the eye of the spectator goes to the centre of the bow, so that the height of the bow is inversely as the height of the sun; and, if the sun is more than 42 or 54 degrees high, there can be no bow. Of course, as it is a mere optical effect, depending on the position of the eye, no two persons can see the same bow. An artificial rainbow may be produced in sunshine by scattering drops of water from a brush, by a garden engine, or otherwise, the water being thrown high in the air, and the spectator standing between it and the sun. The cut-glass ornaments of chandeliers produce colours on the same principle as rain-drops; as do also mist, and particles of frozen water between a luminous body and the eye, exhibiting the circular haloes often observed around the sun and moon.——*Lunar rainbow*. The moon sometimes also exhibits the phenomenon of an iris, by the refraction of her rays in drops of rain in the night time. Aristotle says he was the first that ever observed it; and adds, that is never visible but at the time of full moon. The lunar iris has all the colours of the solar, but much fainter.——*Marine rainbow*, a phenomenon sometimes observed in an agitated sea, when the wind carrying the tops of the waves aloft, and the sun's rays falling upon them, they are refracted.

RAIN-GAUGE, or PLUVIAM'ETER, an instrument to measure the quantity of rain which falls at any place in a given time. A very simple rain-gauge, and one, it is said, which will answer all practical purposes, consists of a copper funnel, the area of whose opening is exactly ten square inches: this funnel is fixed in a bottle, and the quantity of rain caught is ascertained by multiplying the weight in ounces by 173, which gives the depth in inches, and parts of an inch. In fixing these gauges, care must be taken that the rain may have free access to them; hence the tops of buildings are usually the best places. When the quantities of rain collected in them at different places are compared, the instruments ought to be fixed at the same heights above the ground at both places, because, at different heights, the quantities are always different, even at the same place.

RAI'SINS, grapes perfectly ripe, and dried either in an oven or by the heat of the sun; in this latter case they are richer and sweeter than when dried in an oven. The best raisins come from the south of Europe, as Spain, Portugal, and Calabria; there are also very fine ones brought from Smyrna, Damascus, and Egypt: their quality, however, in a great measure depends upon the method of their cure. The finest raisins are those *of the sun*, so called, being the plumpest bunches, which are left to ripen fully upon the vine after their stalks have been half cut through. They are imported in casks, barrels, boxes, and jars; and, exclusive of raisins, a considerable quantity of undried grapes is annually imported from Spain and Portugal, in jars, packed in sawdust. [See Grape.]

STEADY DRY WEATHER IS ALWAYS ACCOMPANIED BY A STEADY DIRECTION OF THE WIND, BUT IN RAINY WEATHER THE WINDS ARE VARIABLE.

RA'JAH, one of the ancient hereditary princes of India, before its conquest by the Moguls; some of whom are tributary to Europeans, and some are said to be independent.

RAKE, in a ship, the projection of the upper parts, at the height of the stem and stern, beyond the extremities of the keel. Also, a term signifying to fire in a direction with the length of anything: for example, to cannonade a ship on the stern or head, so that the balls range the whole length of the deck, is to *rake* her fore and aft.——The word *rake* is also applied to a loose, disorderly, vicious man.

RALLENTAN'DO, in music, an Italian term, implying that the tune of the passage over which it is placed is to be gradually decreased.

RAL'LUS, in ornithology, a genus of birds of the order *Gralla*. They inhabit sedgy places: the principal species are—the crake or land-rail, the brook ouzel or water-rail, the spotted gallinule, and the Philippine rail.

RAM, in zoology, the male of the sheep or ovine genus; in some parts of England called a *tup*.——*Ram*, in astronomy [See ARIES]. See also BATTERING RAM.

RAM'ADAN, a solemn season of fasting among the Mahometans, kept in the ninth month of the Arabic year. The Mahometans call this month holy, and believe that as long as it lasts the gates of paradise are open, and those of hell shut.

RAMEN'TUM, in botany, the small loose scales that are frequently found on the stems of vegetables.

RA'MEOUS, in botany, growing on or shooting from a branch.

RAMIFICA'TION, any small branch issuing from a large one, particularly the very minute branches issuing from the larger arteries.——In botany, the manner in which a tree produces its branches or boughs.

RA'MOUS, in botany having lateral divisions or being full of branches, as a stem or root.

RAM'PANT, in heraldry, an epithet for a lion, leopard, or other beast when it stands on its hinder legs, and rears up its fore feet in the posture of climbing, showing only its profile. It is different from *saliant*, in which the beast seems to be springing forward ——*Rampant gardant*, when the animal stands on its hinder legs, looking full-faced; *Rampant regardant*, when it so stands, but looks behind.

RAM'PART, in fortification, an elevation or mound of earth round a place, capable of resisting the cannon of an enemy; and formed into bastions, curtains, &c. Soldiers continually keep guard upon the ramparts, and pieces of artillery are planted there for the defence of the place.——*Rampart*, in civil architecture, is used for the space left between the wall of a city and the nearest houses.

RA'NA, in zoology, the name of the genus of which frogs and toads are the species.

RANGE, in gunnery, the line which a shot describes from the mouth of a piece to the point where it lodges. When the muzzle is elevated to 45 degrees, it is called the utmost range.——Among mariners, a sufficient length of the cable drawn upon the deck before the anchor is cast loose from the bow.

RA'NGER, an officer whose duty it was to walk through the forest, and present all trespassers at the next forest court. The office of ranger is not of the same importance as formerly, but the situation is still filled, and his duties are of a similar kind.

RANI'NÆ VE'NÆ, in anatomy, the frog veins, certain veins which appear under the tongue.

RANK, the degree of elevation which one man holds in respect to another. This is particularly defined in regard to the nobility, as also in all offices of state, as well as in the officers of the army and navy.——*Rank*, in military tactics, the straight line which the soldiers of a battalion or squadron make as they stand side by side.——*Rank and file*, a name given to the men carrying firelocks, and standing in the ranks, in which are included the corporals.

RAN'SOM, money paid for redeeming a captive, or for obtaining the liberty of a prisoner of war.

RANTERS, a sect of dissenters, originating in Staffordshire, in 1807, and marked by the extravagance of their religious enthusiasm. They sprang from the Wesleyan methodists, from whom they separated, and by whom they are disowned. They hold camp meetings annually, and differ from the parent stock in many of their outward ceremonies, but they still assimilate to the original connection in their religious opinions.

RANUN'CULUS, a perennial much cultivated in gardens, bearing a flower of a globular shape. Also the systematic name of a genus of plants, of which the globe ranunculus, the crowfoot, and the spearwort are the principal species.

RANZ DE VACHE, in music, a favourite national air among the Swiss shepherds, which they play upon their bagpipes while tending their flocks and herds. It consists of a few simple intervals, is entirely adapted to the primitive life of these people and their instrument (the *Alpenhorn*, horn of the Alps), and has an uncommon effect in the echoes of the mountains. This effect becoming intimately associated with the locality of Switzerland, explains the many anecdotes of the home-sickness caused by the sound of the *Ranz des Vaches*, when heard by Swiss in foreign countries.

RAPE, a division of a county; it sometimes means the same as a hundred, and at other times signifies a division consisting of several hundreds: thus Sussex is divided into six *rapes*, every one of which, besides its hundreds, has a castle, a river, and a forest belonging to it. Similar districts in other counties are called tithings, lathes, or wapentakes.——In botany, a biennial plant, of the genus *Brassica*. Rape is cultivated in many parts of England, partly on account of its seed, which is crushed for oil,

THE RANA PIPIENS, OR BULL FROG, IS THE LARGEST SPECIES OF THIS GENUS, THE BODY BEING SIX OR EIGHT INCHES LONG.

THOUGH RANK MAY BE TOO MUCH IDOLISED BY THE ABJECT ADMIRERS OF POWER, IT MAY ALSO BE TOO RASHLY SLIGHTED.

and partly for its leaves as food for sheep. ——*Rape-cake*, is the adhering masses of the husks of rape-seed, after the oil has been expressed: they are reduced to powder by a malt-mill or other machine; and are used either as a top-dressing for crops of different kinds, or are drilled along with turnip seed.

RA'PHANUS, in botany, a genus of plants, class 15 *Tetradynamia*; order 2 *Siliquosa*. The species are the different varieties of the radish.

RAPHID'IA, in entomology, a genus of four-winged insects of the *Neuroptera* order. The head is of a horny substance, and depressed; the tail is armed with a slender horny weapon, not bifid at the extremity: it is about the size of the scorpion fly, and is common in meadows in July.

RAP'IDS, the part of a river where the velocity of the current is very considerable, owing to a gradual descent of the earth, but not sufficient to occasion such a fall of the water as is deemed a cascade or cataract.

RAREFAC'TION, in physics, the act or process of expanding or distending bodies; that is, brought to possess more room, or appear under a larger bulk without accession of any new matter. Rarefaction is opposed to *condensation*. Sir Isaac Newton shows, that the rarefaction of the air is so immense, that it is inconceivable on any other principle than that of a repelling force inherent in the air, whereby its particles mutually fly from one another. [See AIR, ATMOSPHERE, &c.]

RAS'PBERRY, in botany, the fruit of a bramble, or species of *rubus*. Several varieties are cultivated, differing in the size and colour of the fruit, either red, flesh-coloured, or yellow. A light soil is best suited to the culture of the raspberry, and an eastern or western exposure, slightly shaded. It is generally propagated by suckers.

RAT, in zoology, a well-known quadruped of the genus *Mus*, which infests houses, stores, and ships; an animal equally troublesome and destructive.

RATAFIA (pron. *ratafeé*), a delicious liquor, made of the kernels of apricots, cherries, &c. steeped in brandy. In France, *ratifia* is the generic name of all *liqueurs* compounded with alcohol, sugar, and the odoriferous or flavouring principles of vegetables.

RATCH, in clock-work, a sort of wheel having twelve fangs, which serve to lift the detents every hour and thereby cause the clock to strike.

RATCH'ET, a small tooth at the bottom of the fusee or barrel of a watch, which stops it in winding up.

RATCH'IL, among miners, fragments of stone.

RATE, an assessment by the pound for public purposes; as, for the poor, the highways, church repairs, county expenses, &c. In the navy, the order or class of a ship, according to its magnitude or force.

RATH'OFFITE, in mineralogy, a kind of garnet found in Sweden. Its colour is a dingy brownish black, and it is accompanied with calcareous spar and small crystals of hornblend.

RA'TIO, the proportion or multiple of one thing in regard to another thing. Thus, the ratio of 2 to 4 is double, and the same as the ratio of 3 to 6, or 25 to 50. The composition of different ratios is effected by multiplying the antecedents together, and the consequents together.——*Prime* and *ultimate Ratio*, the relation which two variable quantities bear to each other when they are first supposed to be generated, and indefinitely small, hence called *prime*; or the relation of two variable quantities to each other at the instant of vanishing, or becoming indefinitely small, and hence called *ultimate* ratio.

RA'TION, the proportion or fixed allowance of provisions, drink, forage, &c. assigned to each soldier for his daily subsistence, and for the subsistence of horses. Seamen in the navy also have *rations* of certain articles.

RATIONA'LE, the account or solution of any phenomenon or hypothesis, explaining the principles on which it depends, and every other circumstance.

RA''TIONALISTS, a term used to denote certain latitudinarians in religion, who consider the supernatural events recorded in the Scriptures, as events happening in the ordinary course of nature, but described by the writers, without any real ground, as supernatural, and who consider the morality of the sacred writings as subject to the test of human reason.

RAT'LINES, in a ship, lines which make the ladder steps for going up the shrouds and ascending to the mast-head.

RATOON', a sprout from the root of the sugar-cane, which has been cut.

RATTAN', or RATAN', a long slender cane, the growth of a bush in parts of India (the *Calamus rotang* of Linnæus). The species have all perennial, long, round, jointed embranching stems, extremely tough and pliable, often ascending among the branches of trees, but without prickles or tendrils. It is the spontaneous product of all the forests of the Indian archipelago, but exists in great perfection in those of the islands of Borneo, Sumatra, and the Malayan peninsula. "The wood-cutter who is inclined to deal in this article," says Mr. Crawfurd, "proceeds into the forest without any other instrument than his *parang* or cleaver, and cuts as much as he is able to carry away. The mode of performing the operation is this: he makes a notch in the tree at the root of which the rattan is growing, and cutting the latter, strips off a small portion of the outer bark, and inserts the part that is peeled into the notch. The rattan now being pulled through as long as it continues of an equal size, is by this operation neatly and readily freed from its *epidermis*. When the wood-cutter has by this means obtained from 300 to 400 rattans, being as many as an individual can conveniently carry in their moist and undried state, he sits down and ties them up in bundles of 100, each

SOLIDS, WHICH ARE CAPABLE OF BECOMING FLUID, ARE THOSE ONLY WHICH FORM CRYSTALS WHEN RETURNING TO THE SOLID STATE.

rattan being doubled before being thus tied up. After drying, they are fit for the market without further preparation." Immense quantities are consumed in India and Europe, but more particularly in China. For cane work they should be chosen long, of a bright pale yellow colour, well glazed, of a small size, and not brittle.

RAT'TLESNAKE, in zoology, a poisonous serpent of the genus *Crotalus*, from three to eight feet in length, with several horny cells at the tail, which, when moved, produce a loud rattling noise. The head is broad, triangular, and flat; the eyes brilliant, the mouth large, and the tongue forked. They inhabit the woods of North and South America. The sound of their rattle is said to be audible at the distance of twenty yards, and is thus useful in giving warning of the approach of the reptile. Its bite is attended with frightful consequences, as may be seen by the following instance, as narrated in Flint's Geography and History of the United States: "An emigrant family inadvertently fixed their cabin on the shelving declivity of a ledge, that proved a den of rattlesnakes. Warmed by the fire on the hearth of the cabin, the terrible reptiles entered in numbers, and, of course, in rage, by night, into the room where the whole family slept. As happens in those cases, some slept on the floor and some in beds. The reptiles spread in every part of the room, and mounted on every bed. Children were stung in the arms of their parents, and in each other's arms. Most of the family were bitten to death; and those who escaped, finding the whole cabin occupied by these horrid tenants, hissing and shaking their rattles, fled from the house by beating off the covering of the roof, and escaping in that direction." Blumenbach says, "we are assured by credible eye-witnesses that squirrels, small birds, &c. fall from the trees on which they stand, into the throat of the rattlesnake below; the circumstance is not, however, by any means confined to this genus, as it has been remarked in many other serpents of both the Old and the New World."

RAT'TLESNAKE ROOT, in botany, a plant or root of the genus *Polygala*, and another of the genus *Prenanthes*.

RAV'ELINS, in fortification, detached works composed of two faces, forming salient angles, and raised before the counterscarp.

RA'VEN, in ornithology, a large bird of the genus *Corvus*, of a black colour, with a bluish back: the head is small, depressed on the crown, and flatted on both sides; the eyes are large, bright, and piercing; and the beak is long and thick. It builds in high trees or rocks; is long lived, feeds on all sorts of carrion, and has an exquisite sense of smell.

RAY, in optics, a beam of light, propagated from a radiant point; said to be *direct* when it comes direct from the point; *reflected* if it first strike upon anybody, and is thence transmitted to the eye. The mixed solar beam contains, 1st. *calorific rays*, producing heat and expansion, but not vision and colour; 2nd. *colorific rays*, producing vision and colour, but not heat and expansion; 3rd. *chemical rays*, producing certain effects on the composition of bodies, but neither heat, expansion, vision, or colour; and 4th. a power producing magnetism, but whether a distinct or associated power is not determined.——In botany, the outer part or circumference of a compound radiate flower. ——In ichthyology, a bony or cartilaginous ossicle in the fins of fishes, serving to support the membrane.

RAY'-FISH, in ichthyology, a genus of flat fish, with spiracles, of which there are nineteen species; the chief are the skate, thornback, the sting ray, and the torpedo, possessed of galvanic arrangements and powers.

RAYONNA'NT, in heraldry, an epithet for any ordinary that darts forth rays like the sun when it shines forth.

RE, in grammar, a prefix or inseparable particle at the beginning of words, to repeat or otherwise modify their meaning; as in *re*-action, *re*-export, &c.

REACH, in sea language, signifies the distance between any two points of land, lying nearly in a right line.

REAC'TION, in physics, the resistance made by all bodies to the action or impulse of others, that endeavour to change their state, whether of motion or rest.

REA'GENT, in chemistry, the name given to such bodies as serve to detect the component parts of others.

REAL, a small Spanish coin of the value of forty maravedis; but its value is different in different provinces.——*Real*, in law, pertaining to things permanent and immovable; as *real* estate, opposed to *personal* or *movable* property. *Real assets*, assets consisting in real estate, or lands and tenements descending to an heir, sufficient to answer the charges upon the estate created by the ancestor.

REAL'GAR, a metallic substance, the sulphuret of arsenic; which is either native, and dug out of the earth in China, or it is factitious, procured by boiling orpiment in subliming vessels.

RE'ALISM, in philosophy, is the opposite of *idealism*, and is that philosophical system which conceives external things to exist independently of our conceptions of them; but realism becomes materialism if it considers matter, or physical substance, as the only original cause of things, and the soul itself as a material substance.

RE'ALISTS, in philosophy, a sect of school philosophers formed in opposition to the Nominalists, who held that words, and not things, were the objects of dialectics.

REALM, a royal jurisdiction or extent of a king's dominions.

REAL PRES'ENCE, in the Romish church, the actual presence of the body and blood of Christ in the eucharist, or the conversion of the substance of the bread and wine into the real body and blood of Christ.

REAM, a certain quantity of paper. Twenty quires of twenty-four sheets each make a ream of writing paper; but the *printer's ream*, or *perfect* ream of printing paper, consists of 21½ quires, or 516 sheets. Two reams make what is termed a *bundle*.

REAR, a military term for behind.——*Rear-guard*, a body of men that marches in the rear of the main body to protect it.——*Rear-rank*, the last line of men that are drawn up two or more deep.——The *rear* is also a naval term applied to the squadron which is hindermost.

RE'ASON, a faculty of the human mind by which it distinguishes truth from falsehood, and good from evil, and which enables the possessor to deduce inferences from facts or from propositions.

RE'ASONING, or RATIOCINA'TION, the exercise of the faculty of the mind called *reason;* or an operation of the mind, deducing some unknown proposition from other previous ones that are evident and known. Every act of reasoning necessarily includes three distinct judgments; two, wherein the ideas whose relation we want to discover are severally compared with the middle idea, and a third wherein they are themselves connected, or disjoined, according to the result of that comparison. Now, as our judgments when put into words are called propositions, so the expressions of our reasonings are termed syllogisms. And hence it follows that as every act of reasoning implies three several judgments, so every syllogism must include three distinct propositions. Thus, beginning with first principles, we see that reasoning rises gradually from one judgment to another, and connects them in such a manner that at every stage it brings intuitive certainty along with it.——Locke says, *reason* sometimes is taken for true and clear principles; sometimes for clear and fair deductions; sometimes for the cause, particularly the final cause. And Swift adds, "reason itself is true and just, but the reason of every particular man is weak and wavering, perpetually swayed and turned by his interests, his passions, and his vices."

REBATE AND DISCOUNT, a rule in arithmetic by which discounts upon ready money payments are calculated.

REB'EL, one who revolts from the government to which he owes allegiance, either by openly renouncing the authority of that government, or by taking arms and openly opposing it.

REBEL'LION, an open and avowed renunciation of the authority of the government to which one owes allegiance. *Rebellion* differs from *insurrection;* for insurrection may be a rising in opposition to a particular act or law, without a design to renounce wholly all subjection to the government. It may lead to, but is not necessarily in the first instance rebellion. Rebellion differs also from *mutiny*, that being an insurrection of soldiers or sailors against the authority of their officers.

RE'BUS, an enigmatical representation of some name, &c. by using figures or pictures instead of words.——Camden tells us the rebus was in great esteem among our forefathers, and he was nobody who could not hammer out of his name an invention by this wit-craft, and picture it accordingly.——In heraldry a coat of arms which bears an allusion to the name of a person.

REBUT'TER, in law, the defendant's answer to the plaintiff's sur-rejoinder, in a cause depending in the court of chancery, &c.

RECAP'TION, in law, the taking a second distress of one formerly distrained for the same cause during the plea grounded upon the former distress. It is also the name of a writ which lies for the party thus distrained, to recover damages, &c.

RECEIPT', in commerce, an acquittance or discharge in writing for money received, or other valuable consideration.

RECE'IVER, in pneumatics, a glass vessel for containing the thing on which an experiment in the air-pump is to be made.——In law, one who takes stolen goods from a thief, knowing them to be stolen, and incurs the guilt of partaking in the crime.

RECEP'TACLE, in botany, the base by which the other parts of the fructification are connected. The receptacle of the fructification is common both to the flower and the fruit: the receptacle of the flower is the base to which the parts of the flower, exclusive of the germ, are fixed: the receptacle of the fruit is the base of the fruit only: the receptacle of the seeds is the base to which the seeds are fixed.

RE'CIPE, a medical prescription; or directions for preparing any mixture or compound.

RECIP'ROCAL, in general, something that is mutual, or which is returned equally on both sides, or that affects both parties alike.——*Reciprocal terms*, in logic, are those which have the same signification; and consequently are convertible and may be used for each other.——*Reciprocal figures*, in geometry, are those which have the antecedents and consequents of the same ratio in both figures.——*Reciprocal quantities*, in mathematics, are those which, multiplied together, produce unity.——*Reciprocal proportion*, in arithmetic, is when in four numbers the fourth is less than the second by so much as the third is less than the first, and the contrary.

RECITATI'VE, a kind of musical pronunciation, in which the composer and the performer endeavour to imitate the inflections, accent, and emphasis of speech; such as that in which the several parts of the liturgy are rehearsed in cathedral churches, or that of actors on an operatic stage when they relate some event or reveal some design.

RECK'ONING, in navigation, an account of the ship's course and distance calculated from the log-board without the aid of celestial observation. This is called the *dead-reckoning*.

REC'LINATE, in botany, bent down-

A ROBIN LOSES NEARLY ALL THE RED COLOUR OF HIS BREAST IN THE SUMMER, AND DOES NOT RECOVER IT TILL HE HAS DONE MOULTING.

REDBREASTS AND WRENS HAUNT STABLES AND OUT-HOUSES IN THE WINTER, BECAUSE THEY CAN THERE FIND SPIDERS AND FLIES.

wards, so that the point of the leaf is lower than the base.

RECLINA'TION, in dialling, the number of degrees which a dial-plane leans backwards from an exactly upright or vertical plane; that is, from the zenith.

RECOGN'IZANCE, in law, a bond or obligation acknowledged in some court, or before some judge, with condition to do some particular act, as to appear at the assizes, to keep the peace, &c. The person who enters into such bond is called the *recognizor;* the person to whom one is bound is the *recognizee.*

RECOIL', in gunnery, the retrograde motion made by any piece of fire-arms on being discharged. This term is particularly applicable to pieces of ordnance, which are always subject to a recoil, according to the sizes and the charges which they contain. To lessen the recoil of a gun, the platforms are generally made sloping towards the embrasures.

RECONNOI'TRE, in military language, means, to inform one's-self by ocular inspection of the situation of an enemy, or the nature of a piece of ground. It is one of the most important departments of the military art, and must precede every considerable movement. Reconnoitering not unfrequently brings on engagements, and considerable bodies of troops march out to cover the reconnoitering party, and to make prisoners if possible, in order to obtain information from them.

RECORD'ER, a person whom the mayor and other magistrates of a city or corporation associate with them for their better direction in matters of justice, and proceedings in law. He also speaks in their name, upon public occasions.

REC'ORDS, in law, the registers of official transactions, made by officers appointed for the purpose, or by the officer whose proceedings are directed by law to be recorded; as, the *records* of statutes or of judicial courts.——*Court of record,* is a court whose acts and judicial proceedings are enrolled on parchment or in books for a perpetual memorial; and their records are the highest evidence of facts.——*Trial by record,* is where a matter of record is pleaded, and the opposite party pleads there is no such record. In this case the trial is by inspection of the record itself, no other evidence being admissible.

RECOV'ERY, in law, the obtaining a right to something by a verdict and judgment of court from an opposing party in a suit; as, the *recovery* of debt, damages, and costs, by a plaintiff; the *recovery* of land in ejectments, &c.

REC'REMENT, in chemistry, some superfluous matter separated from some other that is useful; in which sense it is the same with scoria, drops, &c.

RECT'ANGLE, a figure whose sides are perpendicular to each other, or 90°.

RECTIFICA'TION, in chemistry, the process of refining by repeated distillation or sublimation, in order to render the substance purer.

REC'TOR, a term applied to the possessors of several official situations; as, 1. A clergyman who has the charge and cure of a parish, and the property of the tithes, &c.; 2. The chief elective officer in several universities; 3. The head master of large public schools in Scotland; 4. The governor in several convents; 5. The superior of a seminary or college of the Jesuits.

REC'TUM, in anatomy, the third and last of the large intestines.

REC'TUS, in anatomy, a name common to several pairs of muscles, so called on account of the straightness of their fibres.

REC'TUS IN CU'RIA, in law, one who stands at the bar, no person objecting any thing against him. Also, one who has reversed an outlawry, and can therefore partake of the benefit of the law.

RECUR'RENT VERSES, in poetry, verses that read the same backwards as they do forwards.

RECUR'VATE, in botany, bowed or curved downwards; as, a recurvate leaf. Or bent outwards; as, a recurvate prickle, corolla, &c.

RECURVI'ROSTER, in ornithology, a fowl whose beak or bill bends upwards.

RECURVIROS'TRA, in ornithology, a genus of birds, order *Grallæ.* Birds of this tribe, called in English *Avoset,* inhabit the southern parts of Europe.

RECU'SANT, in English history, one who refuses to acknowledge the kingly supremacy in matters of religion; as, a popish *recusant,* who acknowledges only the supremacy of the pope.

RED, in physics, one of the simple or primary colours of natural bodies, or rather of the rays of light; but it has different shades or hues, as scarlet, crimson, vermillion, orange red, &c.——The Greeks called the Arabian gulf the *Erythrean* or *Red* sea, probably from Edom or Idumea; improperly applying the meaning of Edom, *red,* to the sea, which improper application has been continued to the present time.

RED'BREAST, in ornithology, a well-known bird, the *Motacilla rubecula* of Linnæus. The fame of this bird has arisen from the habit of its seeking the aid of man during the winter season, when it visits without dread the cottage of the peasant and the palace of the prince.

RED'DIDIT SE, a law term, used in cases where a man renders himself in discharge of his bail.

REDEMP'TION, in law, the liberation of an estate from a mortgage; or the purchase of the right to re-enter upon it by paying the principal sum for which it was mortgaged, with interest and costs; also, the right of redeeming and re-entering.—— In war and in commerce, the act of procuring the deliverance of persons or things from the possession and power of captors by the payment of an equivalent; as, the *redemption* of a ship and cargo.——In theology, the ransom or deliverance of sinners from the bondage of sin and the penalties of God's violated law by the atonement of Christ.

REDOUBT', in fortification, a small square fort without any defence but in front; used in trenches, lines of circumvallation, contravallation, and approach, to defend passages, &c.

RED'START, in ornithology, a bird of the genus *Motacilla*.

REDUCTIO AD ABSURDUM, in logic, a mode of argument by which the truth of a proposition is proved by showing the absurdity of the contrary.

REDUCTION, in arithmetic, the rule for bringing numbers of different denominations into one denomination.——*Reduction*, in mineralogy, signifies the restoring an oxyde or calx to its primitive metal.——*Reduction*, in surgery, an operation whereby a dislocated bone is restored to its proper place.——*Reduction of Equations*, in algebra, the reducing them to the simplest state, or clearing them of all superfluous quantities, by separating the known from the unknown, till the unknown quantity alone is found on one side, and the known ones on the other.

REDUPLICATION, in logic, a kind of condition expressed in a proposition indicating or assigning the manner wherein the predicate is attributed to the subject.

REED, the common name of many aquatic plants. In general, it denotes a kind of long, hollow, knotted grass that grows in fens and watery places.——*Reed*, in music, the little movable tube at the mouth of certain wind instruments.——A well-known implement of the weaver, made of parallel slips of metal or reeds, called *lents*.

REEF'ING, a sea term for the rolling or taking up a sail in a great gale of wind.——*Reef-tackle*, a tackle upon deck, communicating with its pendant, and passing through a block at the top-mast head, and through a hole in the top-sail yard-arm, is attached to a cringle below the lowest reef. It is used to pull the skirts of the top-sails close to the extremities of the yards to lighten the labour of reefing.

REFEC'TION, among certain ecclesiastics, a spare meal or repast just sufficing for the support of life: hence the hall in convents, and other communities, where the monks, nuns, &c. take their refections or meals in common, is called the *refectory*.

REFEREE', one to whose decision a thing is referred; particularly, a person appointed by a court to hear, examine, and decide a cause between parties, pending before the court, and make report thereon.

REFERENCE, in law, the act of referring a matter in dispute to the decision of an arbitrator. Also, in the court of chancery, the referring a matter to a master.——*Reference*, in printing, a mark in the text of a work referring to a similar one in the side or at the bottom of the page.

REFI'NING, in general, is the art or practice of purifying a thing; including not only the assaying or refining of metals, but likewise the clarification of liquors.

REFLECTION, the review or reconsideration of past thoughts, opinions, or decisions of the mind, or of past events.——*Reflection of the rays of light*, in optics, is their return after approaching so near the surfaces of bodies as to be thereby repelled, or driven backwards. The great law of reflection is, that the angle of reflection is always equal to the angle of incidence.

RE'FLEX, in painting, is a term used to denote those places in a picture which are supposed to be illuminated by a light reflected from some other body, represented in the same piece.——*Reflex vision*, that performed by means of reflected rays, as from mirrors

REFOR'M (PARLIAMENTARY), a change to some considerable extent in the representative part of the English constitution, by an extension of the elective franchise to modern large towns, such as Manchester, Birmingham, &c. which heretofore sent no members to parliament and by taking away the franchise from places which had long since become insignificant. [See PARLIAMENT, &c.]

REFORMA'TION, the term applied by Protestants, universally, to denote the change from the Roman Catholic to the Protestant religion, which was first set on foot in Germany by Luther, A.D. 1517, but had been begun in England by Wickliffe, and was afterwards completed by Henry VIII. who assumed the title of Head of the Church. Of all the errors, frauds, and superstitions of the church of Rome, the one which proved most injurious to religion and morals, and that which was most deplored by enlightened and conscientious men, was the facility with which riches were allowed to purchase salvation! Wealth was invested in monasteries, shrines, and chantries; and few persons who had any property at their own disposal went out of the world without bequeathing some of it to the clergy for saying masses, in number proportioned to the amount of the bequest, for the benefit of their souls. Thus were men taught to put their trust in riches; their wealth, being thus invested, became available to them beyond the grave; and in whatever sins they indulged, provided they went through the proper forms and obtained a discharge, they might purchase a free passage through purgatory, or, at least, an abbreviation of the term and a mitigation of its torments while they lasted. But purgatory was not the only invisible world over which the authority of the church extended; for to the pope, as to the representative of St. Peter, it was pretended that the keys of heaven and hell were given; a portion of this power was delegated to every priest, and they inculcated that the soul which departed without confession and absolution, bore with it the weight of its deadly sins to sink it to perdition. To this let us add, that the arrogance of the priests had exasperated the princes; the encroachments of the mendicant friars did injury to the secular ecclesiastics; and a thousand innocent victims of the inquisition called for vengeance. Other causes also conspired to bring on the day of religious freedom: the

AN OPEN RUPTURE WITH THE POPE ENABLED THE REFORMERS TO THROW OFF THE CORRUPTIONS OF RELIGION, BOTH IN DOCTRINE AND WORSHIP.

MANY UNSUCCESSFUL ATTEMPTS HAVE BEEN MADE, BOTH IN THIS AND OTHER COUNTRIES, TO UNITE DIFFERENT SECTS OF PROTESTANTS.

means of information were vastly increased by the art of printing; materials for thinking were laid before the people by instructive works in the vulgar tongues; the number of learned men increased; and the intelligence for which the Reformation was to open a way began to act generally and powerfully. The centre of Europe, together with the north, which had long submitted with reluctance to Rome, was ready to countenance the boldest measures for shaking off the priestly yoke, of which the best and most reflecting men had become impatient. But no one anticipated the quarter whence the first blow would be struck. Leo X. was created pope in 1513; and, little affected by the universal desire for reformation in the church, he seemed placed at its head merely to employ its revenues in the gratification of his princely tastes. Albert, elector of Mentz and archbishop of Magdeburg, a prince of a similar character, received from Leo, in 1516, permission to sell *indulgences* within his own jurisdiction, on condition of sharing the profits with the pope. In this traffic, Albert employed, among others, John Tetzel, a Dominican monk of Leipsic, who went about from place to place, carrying on his trade with the most unblushing impudence, and extolling his certificates above the papal bulls (which required repentance), as unconditional promises of the forgiveness of sins in time and eternity. Luther, an Augustine monk of Erfurt,—a man of powerful mind, and distinguished more for his deep piety and strong love of truth, than for deep erudition,—set his face against this abuse, first in his sermons, and afterwards in ninety-five theses, or questions, which he affixed to the door of the church, Oct. 31, 1517. This led to several public disputations, in which he had such a decided advantage over his antagonists, that this man, who was hardly known before, became the public champion of all enlightened men who lamented the degeneracy of the church of Christ. The respect for the Roman court, which was perceptible in his earlier writings, he now discarded, as the injustice of the papal pretensions had become clear to him. The most complete success attended his endeavours; and wherever the reformed religion found its way, the worship of God recovered that simplicity, and warmth, and sincerity, which had characterized it among the first Christians. Religion was no longer a mere subject of the imagination, but appealed to the reason and feelings of men, and invited close investigation. The reformation also had an important influence on morals. While the reformers abolished the principle of blind obedience to the pope and other ecclesiastical dignitaries, denied the merit of penances, fasts, and alms, and rejected the possibility of acts of supererogation, by which saints had enriched the treasury of the church, they again awakened the smothered moral feelings of men, and introduced that more elevated morality which requires holiness of heart and purity of conduct.

REFRACTION, in optics, the deviation of a ray of light from that right line in which it would have continued if not prevented by the thickness of the medium through which it passes. The great law of refraction, which holds in all bodies and all mediums, is, that a body passing obliquely out of one medium into another wherein it meets with less resistance, is refracted or turned towards the perpendicular; and, on the contrary, in passing out of one medium into another wherein the resistance is greater, it is refracted or turned from the perpendicular. We read of many curious appearances occasioned by atmospherical refraction. The following instance is recorded in the Philosophical Transactions, by William Latham, esq., who, when living at Hastings, was one day surprised by seeing a vast number of people hurrying down to the sea-side. Upon inquiring the reason, he was informed that the coast of France was plainly to be distinguished with the naked eye; and he clearly perceived, without the aid of a telescope, the cliffs on the opposite coast, which are at least between forty and fifty miles distant, and not at other times to be discovered with the best glasses. They appeared to be only a few miles off, and extended some leagues along the coast. Sailors and fishermen along the shore pointed out and named the different places they had been accustomed to visit,—as the Bay, the Old Head, or Man, the Windmill, St. Vallery, and other places on the coast of Picardy. All these places appeared to him as if they were sailing at a small distance into the harbour. From the eastern cliff or hill, Mr. Latham saw at once Dungeness, Dover cliffs, and the French coast all the way from Calais and Boulogne on to St. Vallery, and, as some of the fishermen affirmed, as far as Dieppe. The day was extremely hot, without a breath of wind, and objects at some distance appeared greatly magnified.——*Refraction of the stars*, an inflection of the rays of those luminaries in passing through our atmosphere, by which the apparent altitudes of the heavenly bodies are increased.

REFUGÉE', in political history, a term applied to the French protestants, who, on the revocation of the edict of Nantes, fled from the persecution of France. The same term was also applied to the French priests and other royalists who sought an asylum in this country at the commencement of the revolution.

REGA'LIA, in law, the rights and prerogatives of the sovereign power; also the ensigns of royalty, the crown, sceptre, &c. worn by our kings and queens at their coronation.——*Regalia of the church*, are the rights and privileges which cathedrals, &c. enjoy by royal grants. This term is particularly used for such lands and hereditaments as have been given by different sovereigns to the church.

REGARDANT, in heraldry, looking behind; used for a lion, &c. with the face looking towards the back in an attitude of vigilance.

NEWTON OBSERVES, THAT BODIES ARE TRANSPARENT WHEN THE PORES ARE SO SMALL, AS TO PREVENT REFLECTION.

REGARD'ER, an ancient officer of the king's forest, whose business is to inquire into all offences and defaults committed within the forest, and to observe whether the other officers execute their respective duties.

REGAT'TA, a name given to our yacht and boat races on different parts of the coast, or on large rivers. The word is adopted from the *regatta* in Venice, where boats, containing one person only, contest for prizes on the canals that intersect that city. It is generally a very gay and attractive spectacle, from the number of spectators present in ornamented gondolas.

REGENERATION, in theology, the state of being born again by a spiritual birth; or that change of heart and life experienced by a person who forsakes a course of vice, and sincerely embraces a life of virtue and piety.

RE'GENT, one who governs a kingdom during the minority or absence of the rightful monarch.——In English universities, a master of arts under five years' standing, and a doctor under two.——A member of a board or corporate body in the state of New York, who have power to grant acts of incorporation for colleges, and to visit and inspect all colleges, academies, and schools in the state.

RE"GIMEN, the regulation of diet, or, in a more general sense, of all the naturals, with a view to preserve or restore health.——In grammar, that part of syntax, or construction, which regulates the dependency of words, and the alterations which one occasions or requires in another in connection with it.

RE"GIMENT, in military affairs, a body of troops, either horse, foot, or artillery; the infantry consisting of one or more battalions, and commanded by a colonel or lieutenant-colonel. —— *Regimentals*, the uniform clothing of the army.

RE'GION, in geography, a large extent of land, inhabited by many people of the same nation, and inclosed within certain limits or bounds.——*Region*, in physiology, is used for a division of our atmosphere, which is divided into the upper, middle, and lower regions. The *upper region* commences from the tops of the mountains, and reaches to the utmost limits of the atmosphere. In this region reigns a perpetual, equable calmness, clearness, and serenity. The *middle region* is that in which the clouds and meteors are formed, extending from the extremity of the lowest to the tops of the highest mountains. The *lowest region* is that in which we breathe, which is bounded by the reflection of the sun's rays.——The *ethereal* or *celestial region*, is that vast extent of the universe that contains all the heavenly bodies.——*Elementary region*, a sphere bounded by the orb of the moon, comprehending the atmosphere of the earth.——*Planetary region*, that part of the heavens where the planets perform their revolutions. [See ASTRONOMY, ATMOSPHERE, and AIR.]

RE'GISTER, an official account of the proceedings of a public body, or a book in which are entered and recorded memoirs, acts, and minutes, to be had recourse to occasionally, as well as for preserving and conveying to future times an exact knowledge of transactions.——*Register*, in printing, such an accurate arrangement of the lines and pages, that those printed on one side of the sheet shall fall exactly on those of the other.——Among letter-founders, the inner part of the mould in which the printing types are cast.——*Register*, in chemistry and the arts, an aperture with a lid, stopper, or sliding plate, in a furnace, stove, &c. for regulating the admission of air, and the heat of the fire.——*Parish Register*, a book in which are recorded the baptisms of children, and the marriages and burials in a parish.——*Register ship*, a ship which obtains permission to trade to the Spanish West Indies, and is registered before sailing.

RE'GIUS PROFES'SOR, in literature, a title given to each of the five readers or lecturers in the university of Oxford, so called from king Henry VIII., by whom these professorships were founded.

REG'LET, or RIG'LET, in architecture, a flat narrow moulding, used chiefly in pannels and compartments, to separate the parts or members from each other, and to form knots, frets, and other ornaments. ——In printing, a ledge or thin slip of wood exactly planed, used to separate lines and make the work more open.

REG'NUM ECCLESIAS'TICUM, in law, the absolute and independent power which was possessed and exercised by the clergy previous to the reformation, in all spiritual matters; in distinction from the *regnum seculare*.

REGRA'TER, one who buys and resells in the same fair or market; a *forestaller* being one who buys on the road to the market.

REG'ULA, in archæology, the book of rules or orders of a monastery.

REGULAR BODIES, in geometry, those which are comprehended by like equal and regular plane figures, whose solid angles are all equal.——*Regular curves*, such as are always curved after the same geometrical manner.

REG'ULARS, in military affairs, that part of the army which is entirely at the disposal of government.——In ecclesiastical history, *regulars* are such as live under some rule of obedience, and lead a monastic life.

REG'ULATOR, the small spring belonging to the balance of a watch, and which serves to adjust its motions by retarding or accelerating them.

REG'ULUS, a term formerly employed by chemists, but rarely used now, to denote metallic matters when separated from others by fusion. *Regulus* is a diminutive of *rex*, a king; and was so called because the alchemist expected to find gold, the king of metals, collected at the bottom of the crucible. To procure the regulus or mercurial parts of metals, flux powders were formerly used, as nitre, tartar, &c., to purge the sul-

phureous part adhering to the metal, by attracting it to themselves, and absorbing it.——*Regulus*, in astronomy, a star of the first magnitude, in the constellation Leo, called also from its situation, *cor leonis*, or the lion's heart.——*Regulus*, in ornithology, the name of several birds of the *motacilla* kind. The crested regulus is about the size of the common wren; the head, neck, and back are of a mixed green and gray colour; its breast and belly of a pale gray, and its wings variegated with black and yellow. The head of the male is ornamented with an orange-coloured crest or crown; whence the names *regulus*, *tryannus*, &c.

REIN'-DEER, in zoology, the *Cervus terandus* of Linnæus, an animal of the deer kind that inhabits the northern regions, chiefly in Norway, Lapland, and Greenland; it is five feet in height, horns long and slender, besides a pair of brow antlers. This animal is used by the natives in drawing their sleds and for other purposes; and it is allowed that it will draw a sled on the snow more than a hundred miles in a day.

REJOIN'DER, in law, the defendant's answer to the plaintiff's reply.

RELA'TION, in logic, one of the ten predicaments or accidents belonging to substance.——*Relation, inharmonical*, in music, a term to express that some harsh and displeasing discord is produced in comparing the present note with that of another part.

REL'ATIVE, in general, a term signifying not absolute, but considered as belonging to or respecting something else.——*Relative*, in grammar, a word which relates to or represents another word, called its antecedent, or to a sentence or member of a sentence, or to a series of sentences, which constitutes its antecedent.—*Relative terms*, in logic, terms which imply relation, as guardian and ward; husband and wife; master and servant.

RELAY', a supply of horses ready on the road to relieve others, in order that a traveller may proceed without delay. In hunting, *relay* signifies fresh sets of dogs, or horses, or both, placed in readiness, in case the game comes that way, to be cast off, or to mount the hunters in lieu of the former.

RELE'ASE, in law, is a discharge or conveyance of a person's right in lands or tenements, to another who has some former estate in possession. The words generally used therein are, "remised, released, and for ever quit-claimed."

REL'ICS, in the Romish church, the remains or supposed remains of saints, martyrs, or other holy persons, or something appertaining or belonging to them, devoutly preserved in honour of their memory. At first these objects were only held in high esteem; but on the return of the crusaders from the East, relics greatly multiplied, and eventually superstition ascribed to them miraculous powers, which soon degenerated into a system of fraud of the grossest kind.

RELIE'F, in law, a fine formerly paid to the king by every one who came to an inheritance of land held *in capite*, or military service.——*Relief in chancery*, an order sued out for the dissolving of contracts, &c. on the ground that they are unreasonable or prejudicial.——*To relieve guard*, in military tactics, to bring fresh men for the relief of those that were on guard before.

RELIE'VO, or RELIEF, in sculpture, the prominence of a figure that rises from the ground or plane on which it is formed. There are three degrees of relievo: *alto*, *basso*, and *demi*. The alto-relievo, also called *haut-relief*, or high-relief, is that in which the figure projects according to the natural proportions. Basso-relievo, *bas-relief*, or low-relief, is that usual on medals; and demi-relievo, *demi-relief*, or half-relief, is where one half of the figure rises from the plane.

RELI''GION, that worship and homage which is due to God, considered as our creator, preserver, and most bountiful benefactor. It is divided into natural and revealed. By *natural religion* is meant, that knowledge, veneration, and love of God, and the practice of those duties to him, our fellow-creatures, and ourselves, which are discoverable from the right exercise of our rational faculties, from considering the nature and perfections of God, and our relation to him and to one another. By *revealed religion* is meant, natural religion explained, enforced, and enlarged, from the express declarations of God himself, from the mouths or pens of his prophets, &c.—Religion, in a more contracted sense, is used for any system of faith and worship; and even for the various sects into which each religion is divided. Religion is different from *theology*, inasmuch as the latter is speculative and the former practical. Religion is a system of duties; theology a system of opinions. Theology inquires into the nature of the power or powers to whom all visible things are in subjection; religion is the sentiment which springs from that inquiry. The slightest knowledge of history is sufficient to inform us that religion has ever had a powerful influence in moulding the sentiments and manners of men. In one region or age it has been favourable to civilization and refinement; in another it has been so directed as to fetter genius or warp the human mind. That, however, depends on the purity of the doctrine and the liberality of its teachers.

RELIGIOUS HOUSES, different asyla or habitations for priests, nuns, and poor, still existing in Catholic countries, and before the Reformation abounding in England. They consisted of abbeys, monasteries, priories, hospitals, friaries, and nunneries, supported by lands and bequests left them by pious persons, which became enormous. Nearly the whole (above 3000) were dissolved, and their wealth seized by Henry the Eighth; the monks, nuns, and officers being allowed pensions.

RELIQUÆ, in Roman antiquity, the ashes and bones of the dead, remaining after burning their bodies; which were gathered up, put into urns, and afterwards deposited in tombs.

REMAIN'DER, in division, the nume-

RELICS ARE FORBIDDEN TO BE USED OR BROUGHT INTO ENGLAND BY LAW, AND HOUSES MAY BE SEARCHED FOR THEM.

THE VARIOUS RELIGIONS IN THE WORLD MAY BE REDUCED TO FOUR GREAT CLASSES,—THE JEWISH, CHRISTIAN, PAGAN, AND MAHOMETAN.

rator of a fraction of which the divisor is the denominator; as when we divide by 4, and 3 remains, it signifies that the divisor goes in the dividend ¾ times more than the whole numbers in the quotient.——*Remainder*, in law, an estate in lands, tenements, or rents, not to be enjoyed till after a term of years or another person's decease. There is this difference between a *remainder* and a *reversion*; in case of a reversion, the estate granted, after the limited time, reverts to the grantor or his heirs; but by a remainder it goes to some third person or a stranger.

REMIS'SION, in medicine, the abatement of a disorder which does not entirely leave the patient; in distinction from *intermission*, when it goes entirely away for a time.

REMINIS'CENCE, that faculty of the mind by which ideas formerly received into it, but forgotten, are recalled or revived in the memory.

REMON'STRANCE, a strong representation of reasons against a measure, either public or private; and when addressed to a public body, a prince, or magistrate, it may be accompanied with a petition or supplication for the removal or prevention of some evil or inconvenience.

REMON'STRANTS, in ecclesiastical history, the appellation given to the Arminians who remonstrated against the decisions of the synod of Dort, in 1618.

REM'ORA, in ichthyology, the sucking-fish, a species of *Echeneis*, which is said to attach itself to the bottom or side of a ship, and retard its motion.——In surgery, an instrument for setting a broken bone.

REN'ITENCE, or REN'ITENCY, in physics, the effort of matter to resume the place or form from which it has been driven by the impulse of other matter; the effect of elasticity, or the resistance of a body to pressure.

REN'NET, or RUN'NET, the concreted milk found in the stomach of a calf. The same name is given to a liquor prepared by steeping the inner membrane of a calf's stomach in water, and to the membrane itself. This is used for coagulating milk, or converting it into curd in the making of cheese.

RENT, in law, a sum of money issuing yearly from lands and tenements; a compensation or return, in the nature of an acknowledgment, for the possession of a corporeal inheritance.——*Rack-rent*, is a rent of the full value of the tenement, or near it.——A *fee-farm rent*, is a rent charge issuing out of an estate in fee, of at least one-fourth of the value of the lands at the time of its reservation.

RENT'AL, a schedule in which the rents of manors are set down. It contains the lands let to each tenant, with their names, and the several rents arising.

RENT CHARGE, in law, a charge of rent upon land, with a clause of distress in case of non-payment.

RENVERS'E, in heraldry, set with the head downwards, or contrary to the natural posture.

REPAND', in botany, an epithet for a leaf, the rim of which is terminated by angles having sinuses between them, inscribed in the segment of a circle; or which has a bending or waved margin without any angles.

REPEAT', in music, a character showing that what was last played or sung must be repeated.

REPEAT'ER, a kind of watch, which, by means of a spring, repeats or strikes the hour.

REPEL'LENTS, medicines which drive morbid humours from the part where they have settled; or which prevent such an afflux of fluid to a part, as would raise it to a tumour.

REPENT'ANCE, in a religious sense, sorrow or deep contrition for sin, as an offence and dishonour to God, and a violation of his holy law; but to render it acceptable, it must be followed by amendment of life. Legal repentance, or such as is excited by the terrors of legal penalties, may exist without an amendment of life.

REP'ERTORY, a place in which things are disposed in an orderly manner, so that they can be easily found, as the index of a book, a common-place book, &c.

REPLEV'IN, in law, a remedy granted on a distress, by which a person, whose effects are distrained, has them restored to him again, on his giving security to the sheriff that he will pursue his action against the party distraining, and return the goods or cattle if the taking them shall be adjudged lawful.

REPLICA'TION, in logic, the assuming or using the same term twice in the same proposition.

REPRESEN'TATIVE, one who lawfully represents another for the performance of any duty, according to the wishes of the other and to his own honest judgment. A member of the house of commons is the *representative* of his constituents and of the nation. In matters concerning his constituents only, he is supposed to be bound by their instructions; but in the enacting of laws for the nation, he is supposed not to be bound by their instructions, as he acts for the whole nation. Any other construction of his duty would be derogatory to him as a free and independent member of the senate.

REPRIE'VE, in law, a warrant for suspending the execution of a malefactor.

REPRODUC'TION, a term used for the production of perfect trees and animals from pieces cut off them, as branches planted in the ground, and parts of polype and certain water-worms. These, and the reproduction of several parts of lobsters and crabs, are among the greatest curiosities in natural history.

REP'TILES, in zoology, creeping animals, or such as rest on one part of the body while they advance with the other. Most reptiles have feet, but very small ones, and legs remarkably short in proportion to the bulk of their bodies. They belong to the first order of the class *Amphi-*

ALTHOUGH REPTILES ARE ENDOWED WITH FIVE SENSES, THEY DO NOT POSSESS ANY OF THEM IN GREAT PERFECTION.

VENTILATORS, BY CARRYING OFF THE HEAT, SMOKE, AND FOUL AIR, GREATLY COUNTERACT THE INSALUBRITY OF CROWDED ASSEMBLIES.

bia in the Linnæan system, and include the tortoise, turtle, toad, frog, lizard, crocodile, alligator, chameleon, salamander, &c.

REPUB'LIC, in politics, a state in which the exercise of the sovereign power is lodged in representatives elected by the people. In modern usage, it differs from a democracy or democratic state, in which the people exercise the powers of sovereignty in person: yet the democracies of Greece are often called *republics*.——*Republic of letters*, the collective body of learned men.

REPULLULA'TION, a term in botany for the act of budding again.

REPUL'SION, in physics, that property in bodies by which, if they are placed just beyond the sphere of each other's attraction, they mutually fly from each other. By repulsion a fine needle will lie on water without apparently touching it; and drops of water will roll over a cabbage-leaf without leaving the least trace behind.

REQUES'TS, Court of, in law, a convenient court for the recovery of small debts, held by commissioners duly qualified, who try causes by the oath of parties and of other witnesses.

RE'QUIEM, in music, a prayer in the Romish church, which begins with *Requiem æternam dona eis domine;* whence, "to sing a *requiem*," is to sing a mass for the rest of the souls of deceased persons.

RE'SCRIPT, the answer of an emperor, when consulted by particular persons on some difficult question. This answer serves as a decision of the question, and is therefore equivalent to an edict or decree.

RES'CUE, in law, the forcible retaking of a lawful distress from the distrainor, or from the custody of the law: also, the forcible liberation of a defendant from the custody of the officer.

RESERVA'TION, in law, a clause or part of an instrument by which something is reserved, not conceded or granted.——*Mental reservation*, is the withholding of expression or disclosure of something that affects a proposition or statement, and which if disclosed would materially vary its import.

RESER'VE, or *Corps de reserve*, in military affairs, the third or last line of an army drawn up for battle; so called because they are reserved to sustain the rest, as occasion requires, and not to engage but in case of necessity.

RES'ERVOIR, a place where water is collected and reserved, in order to be conveyed to distant places through pipes, or to supply a fountain, &c.

RESIDEN'TIARY, a canon or other ecclesiastic installed into the privileges and profits of residence.

RESID'UAL FIGURE, in geometry, the figure remaining after subtracting a lesser from a greater.

RESID'UAL ROOT, in algebra, a root composed of two parts or members, connected together by the sign —.

RESID'UARY LEGATEE', in law, the legatee to whom the residue of a personal estate is given by will, after deducting all the debts and specific legacies.

RESIL'IENCE, the act of leaping or springing back, or the act of rebounding; as, the *resilience* of a ball or of sound.

RES'IN, or ROS'IN, a solid inflammable substance exuding from trees; as the common resin, or turpentine, from the pine; mastich from the pistacea; sandarach from the thuya, &c. Pure resins are soluble in alcohol, but the impure resins are not soluble. Resins differ from *gums*, which are vegetable mucilage; and they are less sweet and odorous than balsams. Almost all resins are translucid, not often colourless, but generally brown. When heated, they melt more or less easily into a thick viscid liquid, and concrete, on cooling, into a smooth shining mass.——*Resinous electricity*, is that electricity which is excited by rubbing bodies of the resinous kind, and which is generally *negative*. Hence the term *resino-electric*.

RESIST'ANCE, or Resisting Force, any power which acts in an opposite direction to another, or which prevents the effect of another power; as the *resistance* of a ball which receives the force of another; the *resistance* of wood to a cutting instrument; that of air to the motion of a cannon-ball, or of water to the motion of a ship.——We use the term *resisting medium*, when we speak of a substance which opposes the passage of a body through it.

RESOLU'TION, the operation or process of separating the parts which compose a complex idea or a mixed body.——The determination or decision of a legislative body; or a formal proposition offered for legislative determination.——In mathematics, a method by which the truth or falsehood of a proposition is discovered.——In chemistry, the reducing a body to its component parts.——In surgery, the dispersing of tumours.——*Resolution of forces*, in mechanics, the dividing any force or motion into several others in other directions, but which taken together shall have the same effect as the single one.

RESPIRATION, a most important function of the animal body, consisting in the alternate inhalation and exhalation of air, by which the lungs and chest are alternately dilated and contracted; by the effect of which life is supported.

RESPOND'ENT, in law, one that answers in a suit, particularly a chancery suit.——In the schools, one who maintains a thesis in reply, and whose province is to refute objections or overthrow arguments.

RESPON'SE, an answer; but more particularly used to denote the answer of the congregation to the priest, in the litany and other parts of divine service.——In the Romish church, a kind of anthem sung after the morning lesson.

RESTO'RATIVE, a medicine efficacious in restoring the strength and vigour of the body, or in recruiting the vital powers.

RESTORA'TION, renewal; revival; re-establishment. In England, the return of king Charles II. in 1660, is, by way of emi-

IN PROPORTION AS THE OXYGEN IS DIMINISHED BY AN ASSEMBLY OF MANY PERSONS, SO THE AIR BECOMES LESS FIT FOR RESPIRATION.

nence, called *the Restoration;* and the 29th of May is kept as an anniversary festival, in commemoration of the re-establishment of monarchy.

RESULT'ANT, in mechanics, a force which is the combined effect of two or more forces, acting in different directions.

RESU'PINATE, in botany, reversed. A *resupinate leaf* is when the upper surface becomes the lower, or the contrary. A *resupinate corolla* is when the upper lip faces the ground, and the lower lip the sky.

RESURRECTION, a term implying either the return to life of Jesus Christ, or the revival of the dead at the day of judgment as we are taught to believe by the scriptures.

RESUSCITA'TION, the restoring of persons apparently dead to life; chiefly confined to the restoring of those who appear to be dead from being immersed in water or from hanging. In the efforts made by a drowning person, or animal, to draw in air, the water rushes into the mouth and throat, which parts immediately contract in such a manner as to shut up the passage into the lungs. The contracted state continues as long as the muscles retain the principle of life, upon which the power of muscular contraction depends; when that is gone they become relaxed, and the water enters the windpipe, and completely fills it. As soon as the body is taken out of the water, it should be stripped of any clothes it may have on, and be immediately well dried. It should then be wrapped in dry, warm blankets, or in the spare clothes taken from some of the by-standers, and be removed as quickly as possible to the nearest house, in which a fire is ready or can be made. Whatever mode of conveyance be adopted, particular care should be taken that the head be neither suffered to hang backwards, nor to bend down with the chin upon the breast. When arrived at the house, the body should be laid on a mattress, or a double blanket, spread upon a low table, or upon a door supported by stools, the head and chest being elevated by pillows.—It is presumed that by this time medical assistance may have been procured, and that the proper means, which vary according to the case, will be used.

RETICENCE, *or* RETICENCY, in rhetoric, a figure by which a person really speaks of a thing, while he makes a show as if he would say nothing on the subject.

RETIC'ULATE, in botany, having distinct veins crossing like net-work; as, a *reticulate* petal or corolla.

RET'IFORM, composed of crossing lines and interstices, like a net; as, the *retiform* coat of the eye.

RETAIN'ER, in law, a servant who does not reside in the house of his master, but only attends upon special occasions.

RETAIN'ING FEE, a fee given to a counsel, in order to engage him and prevent his pleading on the contrary side.

RE'TE MUCO'SUM, in anatomy, a mucous membrane between the epidermis and the cutis, which is one part of the integument of the skin, and the principal seat of colour in the human species.

RET'INA, in anatomy, the expansion of the optic nerve on the internal surface of the eye, where the sense of vision is first received, and of which it is the true organ.

RET'INITE, in mineralogy, stone of fusible pitch, of a resinous appearance and of various colours, rarely homogeneous, and often containing crystals of feldspar and scales of mica. It is called also *retinasphalt.*

RETIRA'DE, in fortification, a kind of retrenchment in the body of a bastion or other work, which is to be disputed inch by inch, after the defences are dismantled.

RETORT', a chemical vessel used in distillation. Any substance intended to be acted upon by great heat being put into it, is exposed in it over a lamp, or other fire, and on being volatilized, passes through the end into any other vessel adapted to receive it.

RETRAX'IT, in law, the withdrawing or open renunciation of a suit in court, by which the plaintiff loses his action. A *retraxit* is a bar to any future action, which a *nonsuit* is not.

RETRENCH'MENT, in the art of war, any kind of work raised to cover a post and fortify it against the enemy, such as fascines loaded with earth, gabions, sandbags, &c.

RE'TRO, a prefix to many words, as in retrocession, retrogradation, &c.; implying a going backward.

RETROCES'SION OF THE EQ'UINOXES, in astronomy, the going backwards of the equinoctial points of the signs Aries and Taurus.

RET'ROFLEX, in botany, bent in different directions, usually in a distorted manner; as, a *retroflex* branch.

RET'ROFRACT, or RETROFRACT'ED, in botany, bent back towards its insertion, as if it were broken; as a *retrofract* peduncle.

RETURN', in law, a certificate from sheriffs and bailiffs of what is done in the execution of a writ.——*Return days*, certain days in term time for the return of writs. ——In military and naval affairs, an official account, report, or statement rendered to the commander; as, the *return* of men fit for duty; or the *return* of provisions, ammunition, &c.——*Returns*, in commerce, that which is returned, whether in goods or specie, for merchandise sent abroad. Also, the return of money laid out in the way of trade; as, "small profits bring quick returns."——*Returns of a mine*, in fortification, the windings and turnings of a gallery leading to a mine.——*Returns*, in military affairs, statements given in by the officers of regiments, companies, &c. of the number, condition, &c. of their men, horses, &c.

RETROGRADA'TION, in astronomy, an apparent motion of the planets by which they seem to go backwards in the ecliptic, and to move contrary to the order and succession of the signs.

REUS'SITE, in mineralogy, a salt found

COBALT PRODUCES A BEAUTIFUL BLUE COLOUR, VERY VALUABLE IN PORCELAIN, AS IT ENDURES THE HEAT OF THE FURNACES UNALTERED.

in the form of a mealy efflorescence, or crystalized in flat six-sided prisms, and in acicular crystals.

REVE'ILLE, in military affairs, the beat of drum about break of day, to give notice that it is time for the soldiers to rise and for the sentinels to forbear challenging.

REVELA'TION, the act of revealing, or making a thing public that was before unknown. It is also used for the discoveries made by God to his prophets, and by them to the world; and more particularly for the books of the Old and New Testament. The principal tests of the truth of any revelation are, its being worthy of God, and consistent with his known attributes; and in its having a tendency to refine, purify, and exalt the mind of man to an imitation of the Deity in his moral perfections.

REVELA'TIONS, Book of. [See Apocalypse.]

REV'ENUE, in a general sense, is an annual or continual income, or the yearly profit that accrues to a man from his lands or possessions; but in modern usage, *revenue* is generally applied to the annual produce of taxes, excise, customs, duties, &c. which a nation or state collects or receives into the treasury for public use.——The *royal revenue* is that which the British constitution has vested in the sovereign, to support the regal dignity and power. This is either *ordinary* or *extraordinary*. There was a period when the ordinary revenue of the crown was sufficient to defray the expenses of government, without recurrence to taxes; but much of this is, at the present day, in the hands of lords of manors and other subjects, to whom it has been granted from time to time by the kings of England. From this cause, the crown has become almost dependent on the people for its ordinary support and subsistence; and though at first sight it might seem desirable that now, as heretofore, the executive power were in possession of an hereditary estate and hereditary claims, adequate to the burdens of the community, without the assistance of imposts, yet the least reflection convinces us that the security of political liberty consists in the reverse. The ordinary revenue of the crown is now, as above remarked, but trifling: the *extraordinary*, which includes the whole amount of the taxes yearly voted by parliament, is that which is applied to the expenses of government, and out of which the *civil list*, or more immediate revenue of the crown, is granted. Out of the civil list, are paid the salaries of the ministers, judges, &c.; and only a comparatively small part really belongs to the personal expenditure of the sovereign.

REV'ERIE, a loose or irregular train of thoughts, occurring in musing or meditation; or any wild, extravagant conceit of the fancy or imagination.

REVER'SION, in law, is when the possession of an estate which was parted with for a time returns to the donor or his heirs. Also the right which a person has to any inheritance, or place of profit, after the decease of another.

REVET'MENT, in fortification, a strong wall on the outside of a rampart, intended to support the earth.

REVIEW', in military tactics, the display of a body of troops, for the purpose of exhibiting the state of their appearance and discipline before some superior officer or illustrious personage.——*Review*, in literature, a critical examination of a new publication. Also a periodical publication containing critical examinations and analyses of new works. The person who performs this duty is called the *reviewer*.——*Review* (bill of), in chancery, a bill where a cause has been heard, but some errors in law appearing, or some new matter being discovered after the decree was made, this bill is given for a fresh examination into the merits of the cause.

REVI'SE, a second proof-sheet of a work, for the revisal or re-examination of the errors corrected.——The act of *revising* a book or writing for publication, is termed a *revision*.

REVI'VOR, in law, the reviving of a suit which is abated by the death of any of the parties. This is done by a *bill of revivor*.

REVO'KE, to reverse or repeal. A law, decree, or sentence is revoked by the same authority which enacted or passed it. A devise may be *revoked* by the devisor, a use by the grantor, and a will by the testator. ——A law may cease to operate without an express *revocation*.——To *revoke* at cards is to renounce.

REV'OLUTE, in botany, an epithet for rolled back or downwards; as, *revolute* foliations or leafing, when the sides of the leaves in the bud are rolled spirally back or towards the lower surface.

REVOLU'TION, in politics, a material or entire change in the constitution of government. Thus the *revolution* in England, in 1688, was produced by the abdication of king James II. the establishment of the house of Orange upon the throne, and the restoration of the constitution to its primitive state. In like manner, though with very different consequences, the *revolution* in France effected a change of constitution: but at the bare mention of that dreadful era, when insatiate anarchy grew frantic with its own excesses, the mind recoils with horror, and we are glad to throw over it the mantle of oblivion.——*Revolution*, in physics, the circular motion of a body on its axis; as, the *revolution* of a wheel, &c.——*Revolution*, in astronomy, the motion of any heavenly body in a circular line until it returns to the same point again.

REX SACRO'RUM, among the Romans, was a person appointed to preside in certain sacred duties. He generally performed such office as the kings of Rome had reserved to themselves before the abolition of their power. He was chosen by the *augurs* and *pontifices*, at the establishment of the commonwealth, that the name of king might not be wholly extinct; and in order that his power might never be dangerous to civil liberty, he was not permitted to have the least share in civil affairs.

RHAP'SODI, in antiquity, a name given to such poets as recited or sung their own works, in detached pieces, from town to town. Hence the term *rhapsodies* was particularly applied to the works of Homer, which were so rehearsed.——In modern usage, a collection of passages, composing a new piece, but without necessary dependence or natural connection, is called a *rhapsody*.

RHEN'ISH, pertaining to the river Rhine, or to Rheims in France; as, *Rhenish* wine.

RHETIAN, pertaining to the ancient Rhæti, or to Rhætia, their country, as the *Rhetian* Alps, now the country of Tyrol and the Grisons.

RHET'ORIC, the art of speaking with propriety, elegance, and force; or, as lord Bacon defines it, the art of applying and addressing the dictates of reason to the fancy, and of recommending them there so as to affect the will and desires. Rhetoric and oratory differ from each other as the theory from the practice; the rhetorician being the one who describes the rules of eloquence, and the orator he who uses them to advantage. The parts of rhetoric are, *invention*, *disposition*, and *elocution*. The forms of speech by which propriety and elegance are produced, are denominated *tropes* and *figures*. The general manner in which the orator employs his words for the formation of his speech is called *style*, which is variously distinguished. Rhetoric divides an oration or speech into five parts: the exordium, narration, confirmation, refutation, and peroration. The *exordium* is the part in which the speaker prepares the minds of the auditors for what he is about to advance. It ought to be expressed with considerable care and perspicuity, and the matter and manner should be to the purpose, brief, and modest. The *narration* is the recital of facts or events; and should have the qualities of clearness, probability, brevity, and consistency. The *confirmation* establishes the proofs of a discourse, and arranges them in the manner best adapted to enforce conviction. The *refutation*, or anticipation, furnishes arguments to answer the assertions that may be opposed to the narration. The *peroration*, or conclusion, should recapitulate the whole with condensed force and energy.

RHEUM, in medicine, an inflammatory affection of the mucous glands, attended with increased discharge and an altered state of their excreted fluids.——*Rheum*, in botany, a genus of plants, class 9 *Enneandria*, order 3 *Trigynia*.

RHEUM'ATISM, in medicine, a painful disease affecting the muscles and joints of the body, chiefly the larger joints, as the hips, knees, shoulders, &c. It may arise at all times of the year, when there are frequent vicissitudes of the weather from heat to cold, but the spring and autumn are the seasons in which it is most prevalent.

RHINO'CEROS, in zoology, a quadruped of the order *Feræ*. This animal is only exceeded in size by the elephant: its nose is armed with a horny substance, projecting, in the full grown animal, from two to three feet, and is a weapon of defence which secures him from almost every attack. Even the tiger, with all his ferocity, is but rarely daring enough to assail him. The skin of the rhinoceros is in some parts so thick that it is scarcely penetrable by the sharpest sabre or even a musket-ball. He is not ferocious unless provoked: runs with great swiftness, and rushes through brakes and woods with an energy to which everything yields. The rhinoceros delights in retired places near lakes and streams, and appears to derive one of his greatest satisfactions from rolling in the mud.

RHINO'CEROS-BIRD, in ornithology, a bird of the genus *Buceros*, having a crooked horn on the forehead, joined to the upper mandible.

RHO'DIUM, in mineralogy, a metal discovered among the grains of crude platina by Dr. Wollaston. When pure it is brittle, and requires a much higher temperature for its fusion than any other metal, unless it be iridium. It readily alloys with every other metal, except mercury, and is insoluble in all acids.

RHODODEN'DRON, in botany, the dwarf rose-bay; an evergreen shrub with large handsome flowers of a pink or rose colour.——A genus of plants, class 10 *Decandria*, order 1 *Monogynia*. The species are shrubs.

RHO'DONITE, a mineral of a reddish hue and splintery fracture, occurring compact or fibrous in parts of Germany.

RHOET'IZITE, a mineral of a white colour, occurring in masses or in radiated concretions.

RHOM'BO, or RHOM'BUS, in ichthyology, a species of *pleuronectes*, with the eyes on the left side: it is a moderately large fish, but is not so thick and fleshy as the turbot.

RHOMBOID, in geometry, a quadrilateral figure whose opposite sides and angles are equal, but which is neither equilateral nor equiangular.——In anatomy, the *rhomboid muscle* is a thin, broad, and obliquely square fleshy muscle, situated between the basis of the scapula and the spina dorsi.

RHOMB-SPAR, a mineral of a grayish white, and crystalized in rhomboids, occurring massive, and imbedded in chlorite slate, limestone, &c. It consists chiefly of carbonates of lime and magnesia.

RHOM'BUS, or RHOMB, in geometry, an oblique-angled parallelogram, or a quadrilateral figure whose sides are equal and parallel, but the angles unequal, two of the opposite ones being obtuse, and two acute. It consists of two equal and right cones united at the base.

RHU'BARB, a valuable medicinal root growing in China, Turkey, and Russian Tartary, of which that from Turkey is the most esteemed. It is a plant of the genus *Rheum*, of several species; as, the raphontic, or common rhubarb; the palmated or true Chinese rhubarb; the compact or Tartarian; the undulated, or waved-leaf Chinese rhubarb; and the ribes, or currant rhubarb of

Mount Libanus. There is also a species of rhubarb cultivated in English gardens, which makes agreeable spring tarts, and is considered very wholesome.

RHUS, in botany, a genus of plants, class 5 *Pentandria*, order 3 *Trigynia*. The species are trees and shrubs; as the different kinds of Sumach.

RHYME, in versification, the correspondence of sound between the last syllable or syllables of one verse, and the last syllable or syllables of a verse succeeding immediately, or at no great distance. To constitute this correspondence in single words or in syllables, it is necessary that the *vowel* and the *final* articulations or consonants, should be the same, or have nearly the same sound. The *initial* consonants may be different, as in *hope* and *rope*, *live* and *give*, &c.

RHYMOPŒ'IA, in ancient music, that part of the science which prescribed the laws of rhyme, or what appertained to the rhythmic art.

RHYTHM, or RHYTH'MUS, in music, the measured division of time, or the proportion which the parts of the movement have to each other. In *poetry*, it is the relative duration of the moments employed in pronouncing the syllables of a verse; and in *music*, the relative duration of the sounds that enter into the composition of an air. The poetical rhythm requires a succession of motions of regular duration, which, variously interrupted, must yet be obvious, and combined according to the rules of beauty and grace, so as to form an harmonious whole.

RI'AL, a gold coin of the value of ten shillings sterling, formerly current in Britain.

RIB, in anatomy, a bone which forms a part of the frame of the thorax. In the human body there are twelve ribs on each side, proceeding from the spine to the sternum, or towards it, and serving to inclose and protect the heart and lungs.——In naval architecture, a piece of timber which forms or strengthens the side of a ship.——In botany, the continuation of the petiole along the middle of a leaf, and from which the veins branch out.

RIB'BON, a narrow web of silk, worn either as a badge or as an ornamental part of dress. Ribbon-weaving is an important branch of manufacture, giving employment to numerous hands, and displaying much taste and skill.——*Ribbon*, in naval architecture, a long narrow flexible piece of timber, nailed upon the outside of the ribs, from the stem to the sternpost, so as to encompass the ship lengthwise.

RICE, in botany, a plant of the genus *Oryza*, the seed of which is used as corn. The calyx is a bivalvular uniflorous glume; the corolla bivalvular, nearly equal, and adhering to the seed. It is cultivated in Italy, Greece, and over nearly the whole of Asia. It loves a watery soil, and to whatever height the water rises, wherever it is planted, the growth of the rice keeps pace with it, the summit always appearing above the surface of the water In this necessary property, rice resembles many other aquatic plants. All rice, however, is not the produce of a watery soil; for the upland rice, which is the best, will not thrive there. This grain forms a large portion of the food of the inhabitants of all warm climates, for which it indeed seems specially provided by the all-wise Creator.

RICK'ETS, (technically RACHI'TIS), in medicine, a disease which affects children, and in which the joints become knotted, and the legs and spine grow crooked

RIC'OCHET, or RIC'OCHET-FIRING, in gunnery, the firing of guns, mortars, or howitzers with small charges, and elevated a few degrees, so as to carry the balls or shells just over the parapet, and cause them to roll along the opposite rampart. These batteries are called *ricochet-batteries*.

RIDE, a term made use of in a variety of senses with reference to a ship's position or motion.

RIDEAU', in fortification, a rising ground commanding a plain: also a trench covered with earth in form of a parapet to shelter soldiers.

RI'DER, or RI'DER-ROLL, in law, a schedule, or small piece of parchment, often added to some part of a record or act of parliament.

RI'DING [corrupted, according to Blackstone, from *trithing*, third], one of the three jurisdictions into which the county of York is divided, anciently under the government of a reeve.

RIFACIMEN'TO, an Italian word, of late often used in English, to denote a remaking or furbishing up anew. Its most usual application is to the process of recasting literary works, so as to adapt them to a somewhat different purpose or to a changed state of circumstances.

RI'FLE, a gun having several spiral grooves or channels cut in the barrel. English rifles are generally charged at the breech, the piece being for this purpose made larger there than in any other part. The powder and bullet are put in through the side of the barrel by an opening, which, when the piece is loaded, is filled up with a screw. By this means, when the piece is fired, the bullet is forced through the grooves, and acquires a continuous spiral motion as well as its progressive one.

RI'FLEMEN, soldiers armed with rifles, and employed as marksmen to fire behind hedges, &c.

RIG'GING, the ropes belonging to a ship, by which the masts are sustained and ascended, and the sails managed. The *rigging* is of two kinds, *standing* rigging, as the shrouds and stays, and *running* rigging, such as braces, sheets, halliards, &c. The names and uses of the several ropes, and the dexterous management of them, constitute an able sailor.

RING-BONE, in farriery, a callus growing in the hollow circle of the little pastern of a horse, just above the coronet.

RING'DOVE, in ornithology, the *Columba palumbus*, the largest of the European species of pigeons.

A QUARTER OF A POUND OF RICE, SLOWLY BOILED, WILL YIELD MORE THAN A POUND OF SOLID AND NUTRITIVE FOOD.

RICE, FOR ITS EXCELLENCE AND CHEAPNESS, CLAIMS ATTENTION AS A GENERAL ARTICLE OF SUSTENANCE FOR THE POORER CLASSES.

RIN'GENT, in botany, an epithet applied to an irregular monopetalous corolla, whose border is usually divided into two parts, called the upper and lower lip

RING'LEADER, the chief or leader of any association of men engaged in an illegal enterprise, as rioters, mutineers, &c.

RI'OT, in a general sense, means a tumultuous assembling of twelve persons or more, and not dispersing upon proclamation.——*Riot Act*, an act of parliament prohibiting riotous or tumultuous assemblies, which being read by a magistrate or peace officer to the mob, obliges all persons to disperse within an hour, on pain of being apprehended as rioters.

RITE, a formal act of religion or other solemn duty; the manner of performing divine service as established by law or custom.

RITORNEL'LO (*Italian*), in music, a passage which is played whilst the principal voice pauses: it often signifies the introduction to an air or any musical piece. This *ritornello* is often repeated after the singing voice has concluded; hence the name.

RIT'UAL, a book containing the rites, or directing the order and manner to be observed in celebrating religious ceremonies, and performing divine service in the church.

RIV'ERS, large streams of water flowing through channels or low parts of the surface of the earth, and pursuing their course towards the sea. They produce a variety of phenomena and service to the inhabitants of their banks, though often destruction from overflowing them, owing to inattention in not rendering their courses or outlets proportionate to their occasional increase. The largest rivers in the world are the Amazon and La Plata, in South America; the Mississipi, Missouri, and St. Lawrence, in North America; the Kian Kiou, the Hoanho, the Lena, the Ganges, the Indus, and the Euphrates, in Asia; the Nile in Africa; and the Volga, the Danube, and the Rhine, in Europe. Many of the largest rivers mingle with the sea by means of a single outlet, while others before their termination divide into several branches. This circumstance will depend upon the nature of the soil of the country through which a river runs; but it also frequently results from the velocity of the stream being so much diminished in its latter stage, that even a slight obstacle in the ground has power to change its course, and a number of channels are thus produced.——In a very interesting work, entitled "The Thames and its Tributaries, by C. Mackay," is the following spirited exordium—"Rivers have everywhere been the objects of love and adoration. A sect of the ancient Persians reverenced them so highly, that they deemed it sacrilege to pollute them. For countless ages the dwellers by the Ganges have looked upon it as a god, and have deemed it the summit of human felicity to be permitted to expire upon its banks. The Egyptian still esteems the Nile above all earthly blessings; and the Abyssinian worships it as a divinity. Superstition has peopled these and a thousand other streams with a variety of beings, or personified them in human shapes, the better to pay them homage. Rivers all over the world are rich in remembrances. To them are attached all the poetry and romance of a nation. Popular superstition clings around them, and every mile of their course is celebrated for some incident,—is the scene of a desperate adventure, a mournful legend, or an old song. What a swarm of pleasant thoughts rise upon the memory at the sole mention of the Rhine!—what a host of recollections are recalled by the names of the Danube, the Rhone, the Garonne, the Meuse, the Seine, the Loire, the Tagus, the Guadalquivir!—even the low-banked and unpicturesque Elbe and Scheldt are dear as household things to the neighbouring people. Their praises are sung in a hundred different idioms; and the fair maidens who have dwelt upon their banks, and become celebrated for their beauty, their cruelty, or their woe, have had their names mingled with that of the river in the indissoluble bonds of national song. To the man who has a catholic faith in poetry, every river in Scotland may be said to be holy water. Liddell, and Tweed, and Dee,—Tiviot, and Tay, and Forth, and doleful Yarrow, sanctified by a hundred songs. Poetry and romance have thrown a charm around them, and tourists from every land are familiar with their history. Great writers have thought it a labour of love to collect into one focus all the scattered memoranda and fleeting scraps of ballads relating to them, until those insignificant streams have become richer than any of our isle in recollections which shall never fade."

RIX-DOL'LAR, a silver coin in Germany, Denmark, and Sweden, worth from three to four shillings sterling. In some parts its value is the same as the American dollar, or 4*s.* 6*d.*

ROACH, in ichthyology, a fish of the genus *Cyprinus* or carp kind.

ROAD, a highway, or a way prepared for travellers; it is either a carriage road, where carriages may pass, or a foot road or path for passengers.——Military roads were formerly constructed by the Romans for the passage of their armies, of which there are still vestiges in England. Roads are now principally made by stones broken up into small pieces and bound together with the earth, which is called macadamizing, from the name of the person with whom the plan originated. The formation of good roads gives the greatest facility to commerce, and contributes in an eminent degree to the progress of civilization; for it is well known, that wherever the means of internal communication are deficient in a country, the people are less polished, and generally ill supplied with many of the necessaries, as well as the luxuries of life.——The following is a most discouraging, but, we fear, too true an account of the state of our turnpike-roads, financially considered:—"At the present time (1840) there are 22,000 miles of turnpike roads in England and Wales; upon which there are mortgages to

the amount of 8,365,267*l.*, being an increase of 1,040,464*l.* in the last nine years! The annual receipts are under 1,500,000*l.*; the expense of repairs, 36*l.* per mile per annum; of improvements, 9*l.* per mile; and of surveyors' salaries and other charges, 6*l.* per mile."——We can well remember the time when a "turnpike bond" was considered a most eligible security for our spare cash; but in this railroad age, we suppose the turnpike trusts will not be much longer trusted, and travellers whose faith in high-pressure engines is not all-sufficient, or who may have occasion to deviate from the *direct line*, must soon be content to pick their way through the mire, as their ancestors did before them, when turnpike-gates were just coming into fashion, and the power of steam was altogether unknown.

ROAD, or ROAD'STEAD, a place fit for anchorage at some distance from the shore.

ROAST'ING, in metallurgy, the separation of volatile bodies from those which are more fixed, by the combined action of air and fire; and is generally the first process in the separation of metals from their ores: it differs from sublimation only in this, that in this operation the volatile parts are dissipated, when resolved into vapours: whereas in that, they are preserved.

ROBIN'IA, in botany, a genus of plants, class 17 *Diadelphia*, order 4 *Decandria*. The species are shrubs, as the rose-acacia, &c.

ROC'AMBOLE, in botany, the *Allium scorodoprasum*, a sort of wild garlic, growing naturally in Denmark and Sweden. It has a heart-shaped root at the side of the stalk.

RO'CHELLE SALT, in chemistry, the popular name by which the tartrate of potash and soda is known.

ROCH'ET, a surplice; the white upper garment of a priest worn while officiating.

ROCK, a stony mass, forming a portion of the substance of our globe: rocks are in general disposed in mountainous ranges, though in some few instances they are found existing in immensely large separate masses. Granite stands at the head of the primary rocks. It consists of grains of felspar, quartz and mica intimately aggregated together. The highest mountains in Britain are composed of granite and its associates; but these are merely trifling protuberances on the earth's face, when compared with the exceeding heights of the Alpine chain, or the yet more elevated mountains of South America, and of the Asiatic continent, which consist of the same materials. Some of the varieties of granite are extremely permanent even in mountain masses, and seem almost imperishable, when considered in respect to their uses in the arts. In England and Wales, granite and granitic rocks occur in Cornwall, Devonshire, North Wales, Anglesea, the Malvern Hills, in Leicestershire, Cumberland, and Westmoreland. [See GEOLOGY.]

ROCK'-BASIN, a cavity or artificial basin cut in a rock for the purpose, as is supposed, of collecting the dew or rain for ablutions and purifications prescribed by the Druidical religion.

ROCK-BUTTER, in chemistry, a subsulphite of alumine, oozing from aluminous rocks.

ROCK-CRYSTAL, in mineralogy, the most perfect variety of siliceous earth or quartz. When purest it is white or colourless, but is often found of a grayish white or pale yellow colour. Its most usual form is that of hexagonal prisms, surmounted by hexagonal pyramids.

ROCK'ET, in pyrotechny, an artificial fire-work, consisting of a cylindrical case of paper, filled with a composition of combustible ingredients. This being tied to a stick and fired, ascends into the air and bursts, presenting a shower of stars, coloured according to the nature of the composition. [See CONGREVE ROCKETS.]——*Rocket*, in botany, the name of several kinds of plants of different genera.

ROCK'ING-STONES. Of these rocks, called also Loggan or Laggan stones, there are several among the picturesque barriers of the British coast. They appear to consist of an immense mass, loosened in some convulsion of nature, and with a slightly rounded base resting on a flat surface of rock below, which is so nearly balanced, that an individual can move or rock it. These stones have been variously accounted for by antiquarians; but Dr. Hibbert thinks that the particular use to which they were applied will ever remain in obscurity: "as they are products of every country where loose detached rocks of a particular structure have been submitted to the operation of atmospheric agents, it is to be expected that the fables assigned to their origin would be regulated by the peculiar mythology of the people among whom they have become the object of notice and wonder."

ROCK'-SALT, fossil or mineral salt, dug from the earth. [See SALT.]

ROD, a measure of length containing sixteen feet and a half. In many parts of England the word *rod* is universally used for *pole* or *perch*.——Also, an instrument of punishment or correction, "more honoured in the breach than the observance."

RO'EBUCK, in zoology, a species of deer, the *Cervus capreolus*, with erect cylindrical branched horns, forked at the summit. This animal is remarkable for its elegant shape and activity; is one of the smallest of the cervine genus; and, like the goat, prefers a mountainous country.

ROEL'LA, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are mostly shrubs.

RO'GA, in antiquity, a present which the emperors made to the senators, magistrates, and even to the people. These *rogæ* were distributed by the emperors on the first day of the year, on their birth-day, or on the *natalis dies* of the cities.

ROGATION, in the Roman jurisprudence, a demand made by the consuls, or tribunes of the people, when a law was proposed to be passed.——*Rogatio* is also used for the decree itself made in consequence

COUNTRIES FORMED OF SECONDARY ROCKS ARE GENERALLY CAPABLE OF CULTIVATION OVER THE WHOLE OF THEIR SURFACE.

THE PRIMARY AND TRANSITION ROCKS CONTAIN FEW SALINE OR INFLAMMABLE FOSSILS, BUT GENERALLY MANY ORES.

of the people giving their assent to this demand, to distinguish it from a *senatus consultum*, or decree of the senate.

ROGATION-WEEK, the week preceding Whitsunday, thus called from the three *rogation-days* or fasts therein, viz. Monday, Tuesday, and Wednesday, on each of which extraordinary prayers and processions were made for the fruits of the earth. The word *rogation* is derived "a rogando Deum," "petitioning God."

ROLL, an official writing; a list, register, or catalogue; as, a muster *roll*; a court *roll*, &c.——*Roll call*, the calling over the names of the men who compose any part of a military body.——*Rolls of parliament*, the manuscript registers, or rolls of the proceedings of our ancient parliaments, which before the invention of printing were all engrossed on parchment, and proclaimed openly in every county. In these *rolls* are also contained a great many decisions of difficult points of law, which were frequently in former times referred to the decision of that high court.

RO'LLER, in ornithology, a genus of birds allied to the crows and jays, though more wild and intractable than either. The plumage of almost all the species is very beautiful, being in general an assemblage of blue and green, mixed with white, and heightened by the contrast of more obscure and less vivid colours. They are not carnivorous, and their flesh is said to be palatable.——*Roller*, a piece of wood, iron, brass, &c. of a cylindrical form, used in the construction of several machines, both in husbandry and the arts.——In surgery, a long and broad bandage usually of linen cloth, to be rolled round any part of the body.

RO'LLING-MILL, a machine for working metals into plates, or bars which are required of an even thickness. Rolling-mills are chiefly used for drawing out iron bars after they have been manufactured into bar iron by the forge hammer.

RO'LLING-PRESS, in mechanics, an engine consisting of two cylinders, by which cloth is calendered, waved, &c. Also, a machine or press for taking impressions from steel or copper-plate engravings. There are also a variety of rolling-presses used in other branches of manufacture.

RO'MAN, a native or citizen of Rome; or something pertaining to the place, its people, or their religion.——One of the Christian church at Rome to which St. Paul addressed an epistle, consisting of converts from Judaism or paganism.——In literature, the ordinary printing character now in use, in distinction from the *Italic*.

RO'MAN CATH'OLICS, that society of Christians whose members acknowledge the pope as visible head of the church. [See CATHOLIC.]

ROMAN'CE, in literature, a tale or fictitious history of extraordinary adventures, intended to excite the passions of wonder and curiosity, and to interest the sensibilities of the heart. The *romance* differs from the *novel*, as it treats of great actions and extravagant adventures, soaring beyond the limits of fact and real life. Romances have of late years given way to historical novels; and even such as are occasionally published are very different from those of the olden time, in which the blandishments of beauty and the enterprizes of chivalry were incongruously blended with fictions exceeding all bounds of human credulity.

RO'MISH, relating to Rome, or to the religion professed by the people of Rome; as, the *Romish* religion, ritual or ceremonies.

ROMPEE', in heraldry, an ordinary that is broken, or a chevron, &c. whose upper parts are cut off.

RON'DEAU, a species of poetry, usually consisting of thirteen verses, of which eight have one rhyme, and five another. It is divided into three couplets, and at the end of the second and third, the beginning of the rondeau is repeated in an equivocal sense, if possible.

RON'DO, in music, either vocal or instrumental, generally consists of three strains, the first of which closes in the original key, while each of the others is so constructed as to reconduct the ear in an easy and natural manner to the first strain.

ROOK, in ornithology, a bird of the genus *Corvus*. It differs from the crow in not feeding on carrion, but on insects and grain; and it is gregarious. Rooks are very destructive of corn, especially of wheat, and it behoves the husbandman to keep a watchful eye on his newly-sown fields, for if neglected three or four days when the blade first appears, a good crop may be destroyed in embryo.

ROOT, in botany, that part of a plant which is under ground, and serves to support the plant in an erect position, while by means of its fibrils it imbibes nourishment from the earth, which ascends to the stem, branches, and fruit.——*Root*, in arithmetic, a number or quantity which, multiplied by itself, produces a higher power, as 2, the square root of 4 or the cube root of 8.

ROPE, a large kind of cordage, formed by the twisting of several strands of yarn together; the smallest sort of rope is called *cord*, and the larger kinds *cable*. Large ropes are distinguished into two main classes, viz. the *cable-laid* and *hawser-laid*. The former are composed of nine strands, while the latter consist only of three strands. Ropes of from one inch to two inches and a half in circumference are usually hawser-laid; of from three to ten inches, are either hawser or cable-laid; but when more than ten inches, are always cable-laid.——*Rope making*, the process of twisting yarn into ropes by means of a wheel.——*Rope-walk*, a long covered walk, or a long building over smooth ground, where ropes are manufactured.——*Rope yarn*, the rope of any yarn untwisted.——*Rope-dancer*, one that balances himself, and performs sundry evolutions on a rope, either suspended as a slack-rope, or extended as a tight-rope.

ROSA'CEOUS, in botany, an epithet for a flower composed of several petals, arranged in a circular or rose-like form.

THE ROOTS OF A TREE PROVIDE ITS JUICY FOOD, AND IF THEY ARE INJURED, THE TREE MUST PERISH AS AN ANIMAL DOES BY HUNGER.

RO'SARY, in the Roman Catholic church, a string of beads, or a chaplet consisting of five or fifteen decades of beads, to direct the recitation of so many *Ave Marias*, or prayers addressed to the Virgin Mary. The rosary serves not only to ascertain the number of recitals, but is intended also to keep the thoughts alive to the act of devotion.

ROSE, in botany, a plant and flower of the genus *Rosa*, of many species and varieties, nearly all of which are cultivated in our gardens; but among the most esteemed are the moss rose, Provence rose, damask rose, the hundred-leaved rose, &c. The ancient poets say, that the first rose was brought into the world by the hands of the god of love; and the occasion was, a desire to bribe Harpocrates, the god of silence, to an engagement that he would discover none of the secrets of Venus. Hence it became a custom to place a *rose* in rooms devoted to mirth and entertainment, as a symbol in the presence of which all restraint might be laid aside; accordingly, the proverb, "*under the rose*," denotes secrecy and inviolable silence. The rose is also, from the same cause, the direct *emblem* of silence. Besides the use of the rose at the feasts and convivial meetings of the ancients, it was also frequently laid upon the tombs of the dead, either to signify the silence of death, or as an offering grateful to the deceased, or perhaps to overcome, by its agreeable odour, the fetid exhalations of the grave.——*Rose*, in architecture, an ornament cut in the form of a rose, chiefly used in cornices, friezes, vaults of churches, &c. and particularly in the middle of each face in the Corinthian abacus.——*Rose*, in politics, a badge of distinction formerly assumed by the houses of York and Lancaster, the former of whom took the white rose, and the latter the red. On the union of the two houses by the marriage of Henry VII. with Elizabeth, daughter of Edward IV., the two roses were united in one, which became the royal badge of England.

ROSE-MAL'LOW, in botany, a plant of the genus *Alcea*, larger than the common mallow.

RO'SEMARY, in botany, a plant of the genus *Rosemarinus*, growing naturally in the southern parts of the European continent. It has a fragrant smell, and a warm pungent flavour.

ROSE-NOBLE, an ancient English gold coin stamped with the figure of a rose, first struck in the reign of Edward III. and current at 6*s.* 8*d.* Another larger coin, sometimes so called, passed for 16*s.*

RO'SE-WOOD, in botany, a tree of the genus *Aspalathus*, growing in warm climates, from which is obtained the *oleum rhodii*, an agreeable perfume.

ROSICRU'CIANS, a name assumed by a sect or cabal of hermetical philosophers, who first appeared in Germany, as is generally asserted, in the 14th century. They made great pretensions to science, and to be masters of many important secrets, particularly that of the philosopher's stone.

ROS'TRA, in antiquity, a part of the Roman forum, where orations, pleadings, funeral harangues, &c., were delivered. It was so called from *rostrum*, the beak of a ship, because it was made of the beaks of the ships taken at Antium.

ROS'TRUM, an important part of the ancient ships of war, which were hence denominated *naves rostratæ*. The *rostrum*, or beak, was made of wood and brass, and fastened to the prow to annoy the enemy's vessels. The first *rostra* were made long and high; but they were afterwards made short and strong, and placed so low as to pierce the enemy's ships under water. The *rostra* taken by the Romans from their enemies, and hung up as trophies of victory in the forum, occasioned the pulpit, or place for the orators, to be called *rostra*.

ROT, a fatal disease incident to sheep, supposed to be caused by wet seasons and moist pastures. It is very difficult to prevent the rot, if the year prove very wet, especially in May and June. Salt-marshes, and lands where broom grows, are the best places for the animals so affected. The immediate cause of the mortality of sheep, in this disease, is found to be a great number of small insects, called flukes *(fasciola)*, found in the liver, and supposed to be produced from eggs swallowed with their food.

ROT. [See DRY-ROT.]

RO'TA, the name of an ecclesiastical court at Rome, composed of twelve prelates. This is one of the most august tribunals in Rome, taking cognizance of all suits in the territory of the church, by appeal; and of all matters beneficiary and patrimonial.

ROTA'TION, the act of turning, as a wheel or solid body on its axis, as distinguished from the progressive motion of a body revolving round another body or a distant point. Thus the daily turning of the earth on its axis, is a *rotation*; its annual motion round the sun, is a *revolution*. ——In geometry, the term is applied to the circumvolution of any surface round a fixed and immovable line, which is called the axis of its rotation.——The word *rotation* is used in agriculture to denote a change of crops.——It also implies the course by which persons filling official situations leave their places at certain times and are succeeded by others.

ROTA'TOR, in anatomy, the two apophyses in the upper part of the thigh-bone, otherwise called *trochanters*, which are distinguished into *major* and *minor*.

ROT'TEN-STONE, in mineralogy, a soft kind of stone found in Derbyshire, which is used for all sorts of finer grinding and polishing, for cleaning metallic substances, and sometimes for cutting stones. It is also called *Tripoli*, or *Terra Tripolitana*, from the country from which it was formerly brought.

ROTUN'DA, or ROTUN'DO, a name given to any building that is round both on the outside and inside; but more particularly to a circular building at Rome, which was anciently called the *Pantheon*.

ROUGE, a red paint extracted from the safflower, a plant called by botanists *carthamus tinctorius*. It is used for painting the

cheeks, and when properly prepared, it has been termed by an eminent scientific writer, "the only cosmetic which can be applied without injury to brighten a lady's complexion." Seen at a moderate distance, by candlelight, it may certainly pass for the bloom of health; but in the face of day the "roseate hue of art" is generally discernible without a very close inspection.

ROUE', a term applied to a person, in the fashionable world, who, regardless of moral principle, devotes his life to sensual pleasures.

ROUGH'-CASTING, a kind of mortar used as a covering for external walls, which is thrown on roughly instead of being plastered on.

ROUND'-HEADS, in British history, a name given, during the civil war, to the puritans or members of the parliament party, from the practice which prevailed among them of cropping the hair round.

ROUND'ROBIN, a term applied to a memorial or remonstrance drawn up by any body of men (though the practice is almost entirely confined to the army and navy), who have determined to stand by each other in making a statement of their common grievances to the government, or some person high in authority. The term is supposed to be corrupted from *ruban rond*, because their signatures are written round the remonstrance, or in a circular form, so that it cannot be seen who signed it first.

ROY'AL, pertaining to or becoming one who is invested with regal power.——Among seamen, a small sail spread immediately above the top-gallant-sail; sometimes termed the top-gallant-royal.——*Royal Society*, a society incorporated by Charles II. under the name of "The President, Council, and Fellows of the Royal Society, for the Improvement of Natural Philosophy."——*Royal Academy of London*, a corporation instituted by George III. for the advancement of drawing, painting, engraving, sculpture, modelling, and architecture.——*Royal Institution*, a corporation erected in the year 1800; the great object of which is to render science appplicable to the comforts and conveniences of mankind.

ROW'EN, or ROW'ENS, a name given to the second growth of grass in a season. Its use, perhaps, is local; but, as we understand the term, it is used to distinguish the *second* from the *first crop* of grass mowed in a season.

ROW-PORT, a small square hole in the side of light vessels of war, near the surface of the water, for the use of an oar for rowing in a calm.

RUB'BLE-STONE, a stone, so called from its being rubbed and worn in water.

RU'BEFACIENT, in medicine, an external application which produces redness of the skin.

RU'BELLITE, in mineralogy (called also *red shorl* or *red tourmalin*), a siliceous mineral of a red colour of various shades. It occurs in accumulated groups, with straight tube-like strim. In a red heat, it becomes white, and seems to phosphoresce.

RU'BICEL, in mineralogy, a variety of the ruby, of a reddish colour, from Brazil.

RU'BIGO, in botany, a kind of mildew which appears on the leaves and stems of many plants, and has been found to consist of a small fungus, supposed to arise from a dewy moisture, which, not being exhaled by the heat of the sun, grows and corrupts the inner substance of the plants.

RU'BLE, a Russian silver coin, value about 2*s.* 7*d.*; in Russia, a hundred copecks.

RU'BRIC, in the canon law, a title or article in certain ancient law books; so called because written in red letters. Also, the directions given in the Book of Common Prayer.

RU'BY, a precious stone, next to the diamond in hardness and value. Its constituent parts are alumina, silica, carbonate of lime, and oxyde of iron. The most esteemed, and, at the same time, rarest colour, of the oriental ruby, is pure carmine, or blood red of considerable intensity, forming, when well polished, a blaze of the most exquisite and unrivalled tint. It is, however, more or less pale, and mixed with blue in various proportions; hence it occurs rose-red and reddish white, crimson, peach-blossom red, and lilac blue—the latter variety being named oriental amethyst. A ruby, perfect both in colour and transparency, is much less common than a good diamond, and when of the weight of three or four carats, is even more valuable than that gem. The king of Pegu, and the monarchs of Siam and Ava, monopolize the rarest rubies; the finest in the world is in the possession of the first of these kings: its purity has passed into a proverb, and its worth, when compared with gold, is inestimable.

RUDD, in ichthyology, a fish of the genus *Cyprinus*, with a deep body like the bream, but thicker, a prominent back, and small head.

RUD'DER, in navigation, part of the helm of a ship, consisting of a piece of timber hung on hinges at the stern-posts, which by being turned either way directs the course of the vessel. The rudder is managed by means of the tiller or wheel.

RU'DIMENTS, the first elements or principles of any art or science.——In botany, the germen, ovary or seed-bud, is the *rudiment* of the fruit yet in embryo; and the seed is the *rudiment* of a new plant.

RUDOL'PHINE TA'BLES, a celebrated set of astronomical tables, published by Kepler, and thus entitled in honour of the emperor Rudolph or Rudolphus.

RUFF, in ornithology, a species of birds which derive their name from the disposition of the long feathers of the neck, which stand out like the ruff formerly worn; it is, however, only the male that is furnished with this appendage, which he does not gain till the second year. They are birds of passage, appearing at certain seasons of the year in great numbers in the north of Europe. They are generally taken in large nets. When fattened they are dressed like the woodcock, and their flesh is highly

THE RUBRIC AND THE RULES RELATING TO THE LITURGY ARE ESTABLISHED BY ROYAL AUTHORITY, AS WELL AS THE LITURGY ITSELF.

esteemed. Their pugnacious disposition is so strong, that when they are kept for the purpose of fattening, their place of confinement is obliged to be dark, as, the moment any light is admitted, they attack each other with such fury, and fight with such inveteracy, as to occasion great slaughter.

RU'INS, the remains of a decayed or demolished building, fortress, city, or work of art: as the *ruins* of Palmyra, the *ruins* of an ancient castle, &c.

RULE, that which is established as a principle, or settled by authority for guidance and direction. Thus, a statute or law is a *rule* of conduct for the citizens of a state; precedents in law are *rules* of decision to judges.——*Rule*, in monasteries, corporations, or societies, a law or regulation to be observed by the society and its particular members.——In grammar, an established form of construction in a particular class of words.

RULE OF THREE, in arithmetic, a rule which directs, when three terms are given, how to find a fourth, which shall have the same ratio to the third term, as the second has to the first.

RUM, a well known spirituous liquor, distilled from molasses and the refuse of the cane juice, in the West Indies, whence it is imported in large quantities. Rum of a brownish transparent colour, smooth oily taste, strong body and consistence, good age, and well kept, is the best; and that from Jamaica obtains a decided preference. It is customary in some of the West India islands to put sliced pine-apples in puncheons of rum; this gives the spirit the flavour of the fruit, and hence the designation "pine-apple rum."

RU'MEN, in comparative anatomy, the paunch, or first stomach of such animals as chew the cud, thence called *ruminant* animals. The only animals endowed with the genuine faculty of *rumination* are the cloven-footed quadrupeds, as oxen, sheep, &c.

RU'MEX, in botany, a genus of plants, class 6 *Hexandria*, order 3 *Trigynia*. The species are perennials.

RUN'CINATE, in botany, an epithet for a leaf, the lobes of which are convex before and straight behind, like the teeth of a double saw, as in the dandelion.

RU'NIC, a term applied to the language and alphabet of the Goths, Danes, and other northern nations. The *Runic* character appears to have been in use before the introduction of Christianity in this part of the world, and has therefore a sort of appropriate connection with that early period of European history.

RUN'NER, in sea language, a rope belonging to the garnet, and to the two bolt-tackles. It is reeved in a single block, joined to the end of a pennant, and is used to increase the mechanical power of the tackle.

RUN'NYMEDE, a celebrated meadow where the conference was held June 15th, 1215, between John and the English barons, in which the former was compelled to sign *Magna Charta* and the *Charta de Foresta*. It is five miles east of Windsor, and is now divided into several enclosures.

RUPEE', a coin current in the Mogul empire, and other parts of India. The gold rupee is worth about 2*s*. 6*d*. sterling. Of the silver rupees, the new and the old are of different values.

RUPTURE. [See HERNIA.]

RUS'CUS, in botany, a genus of plants, class 22 *Dioecia*, order *Monadelphia*.

RUSH, a kind of coarse grass that grows in watery lands; the pith is used in some places for wicks to lamps and rushlights. The *flowering rush* is a perennial, and the *sweet rush* a tuberose plant, both of which are cultivated in gardens.

RUS'SIA COM'PANY, a regulated company for conducting the trade with Russia; first incorporated by charter of Philip and Mary, sanctioned by act of parliament in 1566.

RUS'SIA LEATH'ER, the tanned hides of oxen, manufactured in a manner peculiar to the Russians, and much esteemed as a material for binding books and making many articles where a superior kind of durable leather is required. One of the best tests of genuine Russia leather is its throwing out a strong odour of burnt hide upon being rubbed.

RUST, the oxyde of a metal: hence, metals become rusty, when exposed to air or water, by abstracting the oxygen; but grease and varnish protect them, because they consist of hydrogen.

RUS'TIC-WORK, in a building, a term used when the stones, &c. in the face of it are hacked or indented so as to be rough.

RU'TA BA'GA, in botany, the Swedish turnip.

RUTH, *Book of*, a canonical book of the Old Testament, being a kind of appendix to the book of Judges, and an introduction to those of Samuel. Its title is derived from the person whose story is therein principally related.

RU'TILL, in mineralogy, an oxyde of titanium, of a red or brownish red colour. It occurs massive, disseminated, membranous, and in crystals.

RYE, an esculent grain that in its growth resembles wheat. It is easily cultivated, and in many parts of the continent, as well as in the north of England, it is made into bread, but it is much coarser than that made of wheat flour. All soils will produce rye, provided they are not too moist; and many barren lands which are unsuitable for the cultivation of wheat, may be sown with this grain to advantage.

RY'E-GRASS, in botany, a species of strong grass, of the genus *Hodeum*.

RY'OT, in Hindostan, a renter of land by a lease which is considered as perpetual, and at a rate fixed by ancient surveys and valuations.

THE FLAVOUR AND TASTE PECULIAR TO RUM ARE DERIVED FROM THE ESSENTIAL OILS CARRIED OVER IN DISTILLATION.

THOUGH MANY HAVE ATTEMPTED TO MANUFACTURE "RUSSIA LEATHER" IN OTHER COUNTRIES, THEY HAVE HITHERTO ENTIRELY FAILED.

S.

S, the nineteenth letter and fifteenth consonant of our alphabet, is a sibilant articulation; the sound being formed by driving the breath through a narrow passage between the palate and the tongue elevated near it, together with a motion of the lower jaw and teeth towards the upper. The sound of this letter varies, being strong in some words, as in *this, thus,* &c. and soft in words which have a final *e,* as *muse, wise,* &c. It is generally doubled at the end of words, whereby they become hard and harsh, as in *kiss, loss,* &c. In a few words it is silent, as in *isle* and *viscount.* As an abbreviation, in music, S stands for *solo.* In books of navigation, and in common usage, S stands for *south,* S.E. for *south-east,* S.W. for *south-west,* S.S.E. for *south-south-east,* S.S.W. for *south-south-west.* In the notes of the ancients, S stands for *Sextus;* Sp. for *Spurius;* and S.P.Q.R. for *senatus populusque Romanus.*

SABÆ'ANS, or SA'BIANS, idolators of the East, who in all ages, whether converted in part to Judaism, Christianity, or Mohammedanism, or unacquainted with either, have worshipped the stars. Some of the Sabæans, who acknowledge the name of Christ, are distinguished by the title of "Christians of St. John," on account of their attachment to the baptism of that forerunner of the Messiah. *Sabaism* bears the marks of a primitive religion: to the adoration of the stars, it joins a strong inculcation of respect for agriculture.

SAB'AOTH, a word of Hebrew derivation, signifying *armies.* It is used, Rom. ix. 29; James, v. 4, "the Lord of Sabaoth."

SABBATA'RIANS, a sect of baptists who are only remarkable for adhering to the Judaic sabbath, the observance of which they contend was not annulled by the Christian dispensation.

SAB'BATH, the seventh day of the week, a day appointed by the Mosaic law for a total cessation from labour, and for the service of God, according to the divine command, "Remember that ye keep holy the Sabbath day," &c. From the accounts we have of the religious service practised in the patriarchal age, it appears that immediately after the fall, when Adam was restored to favour through a mediator, a stated form of public worship was instituted, which man was required to observe, in testimony, not only of his dependence on the Creator, but also of his faith and hope in the promise made to our first parents, and seen afar off. In the earliest times of Christianity, the desire of distinguishing the Christian from the Jewish observance, gave rise to the celebration of Sunday, the first day of the week, as a sacred festival in commemoration of our Saviour's resurrection—hence emphatically called "the Lord's day." The converts from Judaism, however, retained the celebration of the Sabbath, though they adopted also that of Sunday; and thus in course of time the strict solemnities of the one became blended with the cheerful piety of the other. But independent of the divine injunction, a sabbath, or weekly day of rest and pious meditation, is an institution, on whichever day kept, highly conducive to the happiness and comfort of mankind.—We may here observe, that this septenary division of time has been, from the earliest ages, uniformly observed over all the eastern world. The Assyrians, Egyptians, Arabians, and Persians, made use of a week consisting of seven days. Many futile attempts have been made to account for this uniformity; but a practice so general and prevalent could never have taken place had not the septenary distribution of time been instituted from the beginning, and handed down by tradition.

SABBATICAL YEAR, in the Jewish economy, was every *seventh* year, in which the Israelites were commanded to suffer their fields and vineyards to *rest,* or to lie without tillage. The first *sabbatical* year, celebrated by the children of Israel, was the fourteenth year after their coming into the land of Canaan; because they were to be seven years in making themselves masters of it, and seven more in dividing it amongst themselves. This year was reckoned from *Tisri* or September, and for several reasons was called the year of *release:* 1. because the ground remained entirely untilled; 2. because such debts as had been contracted during the six preceding years, were remitted and cancelled; and 3. because all Hebrew slaves were then set at liberty.

SABEL'LA, in natural history, a genus of the *vermes testacea,* of which there are twenty-five species: *Sabella scruposa* is found in India and the American islands. The shell is subulate, and composed of equal grains of sand. *Sabella alveolata* has numerous parallel tubes, forming in the mass the appearance of honey-combs.

SABEL'LIANS, a sect of Christians founded by Sabellius, at Ptolemais, in the third century. Their doctrine taught that the Father, the Son, and the Spirit are names of the one God under different circumstances.

SA'BLE, in zoology, the brown mustela with gray ears, very like the common weasel in form, but equal to the polecat in size: the fur of this animal is very thick and deep, and remarkably fine and glossy. It is a native of America and the northern parts of Asiatic Russia. It burrows in the earth or under trees; in winter and summer subsisting on small animals, and in autumn on berries. The fur is very valuable.—*Sable,* in heraldry, the tincture of black, represented in engraving by perpendicular and horizontal lines.

THE SKINS OF WILD ANIMALS, IN THEIR ROUGH STATE, ARE CALLED "PELTRY;" BUT WHEN PREPARED FOR SALE, THEY ARE CALLED "FURS."

SAC, in law, the privilege enjoyed by the lord of a manor, of holding courts, trying causes, and imposing fines.

SAC'BUT, or SACK'BUT, a musical wind instrument; a kind of trumpet so contrived that it can be drawn out or shortened according to the tone required.

SACCA'DE, a sudden violent check of a horse by drawing or twitching the reins on a sudden, and with one pull.

SAC'CHARINE ACID, in chemistry, Acid of Sugar; a white crystalized salt procured by distilling sugar with nitrous acid.

SACCHAROM'ETER, the name of an instrument for ascertaining the value of worts, and the strength of different kinds of malt liquors. It is merely an hydrometer contrived to compare the weight of worts with that of equal quantities of the liquor employed in the brewery.

SACCHOLAC'TIC ACID, in chemistry, the sugar of milk in combination with oxygen; called also *mucic acid*.

SAC'CHOLATE, in chemistry, a salt formed by the combination of the saccholactic acid with different bases, as saccholate of iron, saccholate of ammonia, &c.

SACK, a wine much esteemed by our ancestors. It was brought from Spain, and supposed to have been very similar to sherry or canary.——*Sack*, a large cloth bag used for holding and conveying corn, small wares, &c.——Among our rude ancestors, a kind of cloak of a square form, worn over the shoulders and body, and fastened in front by a clasp or thorn. It was originally made of skin, afterwards of wool. In modern times, but not recently, this name has been given to a woman's gown with loose plaits on the back.——*To sack*, is to plunder or pillage a town when taken by assault.

SAC'RAMENT, in Christian rituals, is defined an outward sign of a spiritual grace annexed to its use. The Roman church recognizes seven sacraments; baptism, confirmation, the eucharist, penance, extreme unction, ordination, and marriage. The Sabæan Christians reduce the sacraments to four; the eucharist, baptism, ordination, and marriage. The Protestant churches acknowledge only two, the eucharist or Lord's supper, and baptism; but they agree with the Roman church in styling the eucharist, pre-eminently, the *holy sacrament*. The eucharist is also known in the Roman church by the name of "the host."

SACRAMENTA'LIA, in ecclesiastical history, certain sacramental offerings formerly paid to the parish priest at Easter, &c.

SACRAMEN'TUM MILITA'RE, in antiquity, the name of the oath taken by the Roman soldiers after the levies were completed.

SAC'RIFICE, a solemn act of religious worship, consisting in the dedication or offering up something animate or inanimate on an altar, by the hands of the priest, either as an expression of gratitude to the Deity for some signal mercy, or to acknowledge our dependance on him, and conciliate his favour. The Jews had two sorts of sacrifices, taking the word in its most extensive signification: the first were offerings of tithes, first-fruits, cakes, wine, oil, honey, &c., and the last, offerings of slaughtered animals. The principal sacrifices of the Hebrews consisted of bullocks, sheep, and goats; but doves and turtles were accepted from those who were not able to bring the other; and whatever the sacrifice might be, it must be perfect and without blemish. The rites of sacrificing were various, all of which are very minutely described in the books of Moses.

SAC'RILEGE, the crime of violating or profaning sacred things; or the alienating to laymen or to common purposes what has been appropriated or consecrated to religious persons or uses.

SA'CRUM, or OS SACRUM, in anatomy, the broadest of all the bones in the back; it sustains all the other vertebræ, and in shape somewhat resembles a triangle.

SAD'DUCEES, a sect among the ancient Jews, esteemed as free-thinkers, rather than real Jews, though they assisted at all the ceremonies of worship in the Temple. Their origin and name is derived from one Sadoc, who flourished in the reign of Ptolemy Philadelphus, about 263 years B.C. They denied the immortality of the soul, and the existence of all spiritual and immaterial beings. They acknowledged, indeed, that the world was formed by the power of God, and superintended by his providence; but that the soul at death suffered one common extinction with the body. They held the scriptures alone to be of divine authority, and obligatory upon men, as a system of religion and morals; and paid no regard to those traditionary maxims and human institutions which the Jews in general so highly extolled, and the Pharisees reverenced even more highly than the scriptures themselves.——The tenets of the Sadducees are called *Sadducism*.

SAFE-CON'DUCT, a pass or warrant of security given by the sovereign under the great seal to a foreigner, for his safe coming into and passing out of the kingdom. Generally speaking, passports have superseded the use of special safe conducts.

SA'FETY-LAMP, a lamp invented by Sir Humphry Davy for the use of miners in the coal-mines, to prevent the fatal explosions which have arisen from the use of common lamps. It consists of a lamp surrounded by a wire-gauze, which by confining the flame from the fire-damp, without intercepting the light, enables the miners to work in safety; and which, in gratitude to its illustrious inventor, is, in mining districts, called *the Davy*. Mr. Dillon, an ingenious writer on practical science, maintains, in opposition to Sir Humphry Davy, that the Davy lamp acts by its heat and rarefaction, not from the flame being cooled by the wire-gauze covering. He shows, by a simple experiment, that the Davy lamp is not safe in a current of hydrogen, or carburetted hydrogen gas, which, if steadily directed on the flame of the lamp from a bladder and stop-cock, by cooling the wire-

gauze, brings the flame of the lamp through the gauze to the mouth of the stop-cock, even should there be six folds of gauze intervening. He shows also, by immersing the lamp, when cold and newly-lighted, into a jar of dense hydrogen, or carburetted hydrogen gas, or an explosive mixture with atmospheric air, that explosion takes place inside and outside of the lamp; whereas, when the lamp has burnt sufficiently long to heat the wire-gauze, no explosion takes place on the outside of the lamp. These experiments appear incontrovertible in support of his theory, which is, "that the wire-gauze is merely the rapid receiver and the retainer of heat, and that it is the caloric in its meshes which prevents the flame of the lamp from being fed by the oxygen of the atmosphere on the outside."—An improved safety-lamp, by Messrs. Upton and Roberts, appears to possess all the advantages desired. There is but one coat of wire-gauze, but it is enclosed in a glass cylinder, in such a manner as to admit the air which feeds the flame only under its bottom, first through an annular range of holes, and next through one disc, or several, of wire-gauze, fixed a little way below the wick. The explosive air, after passing up through these wire-gauze discs, enters a little brass cupola, and is reflected inwards from the orifice at its top upon the flame, whereby it is completely burned before it reaches the cavity of the surmounting cylinder. By this reverberatory action of the air upon the wick, the intensity of the light is at the same time greatly augmented. The wire-gauze can never become very hot, far less ignited in the new lamp. There are, in fact, three impediments to the passage of the flame out of the lamp; first, the stratum of carbonic acid round the light; secondly, the wire-gauze cylinder; and thirdly, the glass cylinder: and even if the glass should be accidentally broken, the lamp is still a complete Davy.

SA'FETY-VALVE, in mechanics, a valve by means of which a boiler is preserved from bursting by the force of steam.

SAF'FLOWER, or BASTARD SAF'FRON, a deep red fecula separated from orange-coloured flowers, particularly those of the *carthamus tinctorius*. The flowers, which are sometimes sold under the name of *saffranon*, are the only parts employed in dyeing. The fine rose colour of safflower, extracted by crystalized soda, precipitated by citric acid, then slowly dried, and ground with the purest talc, produces the beautiful rouge known by the name of *rouge végétale*.

SAF'FRON, a sort of filamentous cake, prepared from the stigmas, with a proportion of the style, of a perennial bulbous plant *(Crocus sativus)*. It contains a yellow matter called *polychroïte*, a small quantity of which is capable of colouring a great body of water. It is grown in some of the eastern counties of England, and is also imported from Sicily, France, and Spain. Saffron is used to tinge confectionary articles, liqueurs, and varnishes; and sometimes in colouring butter and cheese. It was also formerly much used in medicine, as well as in the arts, but not much at the present time.

SAGAPE'NUM, in pharmacy, a gum-resin brought from the East in granules and masses. It is of a compact substance, heavy, of a reddish colour, with small whitish or yellowish specks. It is an attenuant, aperient, and discutient.

SAGITTA, in astronomy, the arrow or dart, a constellation of the northern hemisphere, near the eagle. In trigonometry, the versed sine of an arc, so called because it is like a dart or an arrow standing on the chord of the arc.

SAGITTA'RIA, in botany, a genus of plants, class 21 *Monoecia*, order 7 *Polyandria*, so called from the form of the leaves resembling the head of an arrow.

SAGITTA'RII, in the Roman army under the emperors, were young men armed with bows and arrows, who, together with the *Funditores*, were generally sent out to skirmish before the main body.

SAGITTA'RIUS (the *Archer*), in astronomy, the ninth sign of the zodiac, which the sun enters Nov. 22.

SA''GITTATE, in botany, an epithet for a leaf, stipule, or anther, whose shape is triangular, and hollowed at the base, like the head of an arrow.

SA'GO, a species of starch made from the pith of the sago palm, a large tree of the palm kind, growing in the East Indies. The tree being felled, is split asunder lengthwise, and the pith, even in its unprepared state, is found to be eatable. This, however, is reduced, by means of the pestle, into a powder resembling meal. The meal is placed in a large sieve, and the finer particles forced through with water. The flour is afterwards made into a paste, and then dried in a furnace. Sago becomes soft and transparent by boiling in water, and forms a light and agreeable liquid, much recommended in febrile, phthisical, and calculous disorders, &c.

SAGOIN', in zoology, a division of the genus *Simia*, including such of the monkeys of America as have hairy tails, not prehensile.

SAH'LITE, a mineral of a light greenish gray colour, occurring massive, and composed of coarse granular concretions.

SAIC, a Turkish or Grecian vessel, very common in the Levant; a kind of ketch which has no top-gallant-sail, nor mizen-top-sail.

SAIL, in navigation, a large piece of canvas composed of several breadths sewed together, which when extended, by means of lines, is fitted to receive the impulse of wind by which a ship is driven.——*To make sail*, is to extend an additional quantity of sail for the sake of increasing a ship's speed. *To set sail*, to spread or expand the sails; and hence, to begin a voyage. *To strike sail*, to lower the sails suddenly, as in saluting or in sudden gusts of wind.

SAIL'ING, properly denotes the art of navigating and working a ship; or of causing her to observe such motions and directions

FOREIGN SAILS, WHEN IMPORTED BY, AND IN THE ACTUAL USE OF ANY BRITISH SHIP, ARE EXEMPTED FROM DUTY; BUT NOT OTHERWISE.

LIQUID AMMONIA SHOULD BE KEPT IN WELL-STOPPED BOTTLES, BECAUSE WHEN IT IS EXPOSED TO THE AIR IT ABSORBS CARBONIC ACID.

as are assigned by the navigator; in which latter sense sailing differs from the art of navigation, and must be learned by practice on shipboard.——*Sailing* also denotes a particular method of navigation; in which sense we say, *Mercator's* sailing, *plane* sailing, *parallel* sailing, *middle latitude* sailing, and *great circle* sailing.

SAINT, in a limited but the most usual sense of the word, signifies certain individuals whose lives were deemed so eminently pious, that the church of Rome has authorized the rendering of public worship to them. In its widest sense, it signifies the pious, who in this world strictly obey the commands of God, or enjoy, in the eternal world, that bliss which is the reward of such a life on earth.—The doctrine of saints, and the ideas and usages which grew out of it, form one of the main points of difference between the Protestants and Roman Catholics. In all probability, the veneration paid to saints, relics, &c. originated from the virtues displayed by the early Christian martyrs; and it is also very natural to suppose, that in ages when information was transmitted chiefly by tradition, facts easily became exaggerated, without intentional violation of the truth; and many miracles were, accordingly, reported to have been wrought by their relics or intercession.

SAL'AMANDER, in zoology, an animal of the genus *Lacerta*, a species of lizard of deep black and orange colours, and perfectly harmless. This animal is oviparous, inhabits cold damp places among trees or hedges, avoiding the heat of the sun; yet ignorance and superstition have ascribed to it the power of resisting fire.

SAL AMMO'NIAC, in chemistry, a saline concrete or salt, which was said to be dug out of the sands of Ammonia in Egypt, or there manufactured, and from which it took its name. There is no native salt of this name known to the moderns, but a factitious salt composed of a volatile alkali and the acid of sea salt, whence it is called the muriate of ammonia. In Egypt it is made in great quantities from the soot of camel's dung, which is burnt in Cairo instead of wood; and in every part of Egypt, but especially in the Delta, peasants are seen driving asses loaded with bags of that soot, on their way to the sal ammoniac works. Various animal offals develop, during their spontaneous putrefactive fermentation, or their decomposition by heat, a large quantity of free or carbonated ammonia among their volatile products; and upon this principle many sal ammoniac works have been established. The best white sal ammoniac is in semi-transparent spheroidal cakes, each weighing about a quarter of a cwt. It is principally used in tinning of cast iron, wrought iron, copper, brass, and for making the various ammoniacal preparations of pharmacy.

SAL'ARY, the stipend or remuneration made to a man for his services—usually a fixed annual sum; in distinction from *wages*, which is for day labour; and *pay*, which is for military service.

SAL'EP, or SALOOP', in the materia medica, the dried root of a species of *orchis;* also, a preparation of this root to be used as food. That which is imported from India is in white oval pieces, hard, clear, and pellucid, and without smell: as an article of diet, it is said to be light and nutritious.

SAL'IC, or SAL'IQUE LAW, an ancient and fundamental law of France, usually supposed to have been made by Pharamond, or at least by Clovis, by virtue of which males only can inherit the throne. Though, by this law, the crown of France is prevented from being worn by a woman, the provision was a general one, without particular regard to the royal family; as the crown of England descends to the eldest son, by the *general* right of primogeniture. —The *Salic Franks*, from whom this term was derived, settled in Gaul in the reign of Julian, who is said to have given them lands on condition of their personal service in war.—The historian Millot observes, there is no ground for believing that the Salic law expressly settled the right of succession to the crown; it only says that, with relation to the Salic land, women have no share of heritage without restricting it to the royal family; for all those Salic lands which were held by right of conquest.

SAL'ICINE, in chemistry, a febrifuge substance obtained from the bark of the white willow *(Salix alba)*, as also of the aspen-tree, some other willows, and some poplars.

SALICOR'NIA, in botany, a genus of plants, class 1 *Monandria*, order 1 *Monogynia*.

SA'LIENT, in heraldry, an epithet applied to a lion or other beast, represented in a leaping posture, with his right foot in the dexter point, and his hinder left foot in the sinister base of the escutcheon, by which it is distinguished from *rampant*. ——*Counter-salient* is when two beasts on the same escutcheon are salient, the one leaping one way, and the other in an opposite direction, so that their bodies cross.

SALIFI'ABLE BASES, in chemistry, substances which, when combined with acids, form salts.

SAL'IFY, in chemistry, to form into a neutral salt, by combining an acid with an alkali, earth, or metal.

SALI'VA, the fluid secreted by certain glands, by which the food is moistened before it is conveyed into the stomach. Those glands which secrete the saliva are termed *salival glands*.

SALIVA'TION, in medicine, the act or process of producing an increased secretion of saliva, for the cure of disease, by mercurial preparations.

SA'LIX, in botany, a genus of plants, class 22 *Dioecia*, order 2 *Diandria*. All the species of *Salix* are trees, very hardy, remarkably fast growers, and several of them attaining a considerable height when permitted to run up to standards. They are usually of the aquatic kind, being generally the most abundant and of most prosperous growth in watery situations.

ST. DENIS IS THE PATRON OF FRANCE; ST. GEORGE, OF ENGLAND AND RUSSIA; ST. PATRICK, OF IRELAND; AND ST. ANDREW, OF SCOTLAND.

SAL'LY, in the military art, the issuing out of the besieged from a town or fort, and falling upon the besiegers in their works, in order to cut them off, or harass and exhaust them.——"To cut off a *sally*," is to get between those that made the sally and their town.

SAL'LY-PORT, in fortification, a postern gate, or a passage under ground from the inner to the outer works, such as from the higher flank to the lower, or to the communication from the middle of the curtain to the ravelin.——*Sally-ports* are also doorways on each quarter of a fire-ship, out of which the men make their escape into the boats as soon as the train is fired.

SALMON (pron. *sam'mon*), in ichthyology, a fish of the genus *Salmo*, found in all the northern climates of Europe, Asia, and America, ascending the rivers for spawning in spring, and penetrating to their head streams. It is a remarkably strong fish, and will even leap over considerable falls which lie in the way of its progress. It generally runs from about 12 to 24 pounds in weight, but sometimes salmon are taken weighing from 50 to 60 lbs. It furnishes a delicious dish for the table, and is an article of commerce. The process of spawning frequently occupies more than a week; during which the eggs deposited by a single fish sometimes amount to 20,000. The spawning season extends from the end of October to the beginning of February, and, according to very satisfactory evidence, it occurs about the same time throughout all the rivers of the United Kingdom. The eggs of the salmon remain in the gravel for several months, exposed to the influence of running water. In the course of the month of March the fry are evolved. When newly hatched, they are scarcely an inch in length, of the most delicate structure, and for a while connected with the egg. Upon leaving the spawning bed, the fry betake themselves to the neighbouring pools, where they speedily increase to two or three inches in length. In April, May, and June, they migrate towards the sea, keeping near the margin, or still water, in the river; and when they reach the estuary, they betake themselves to a deeper and more sheltered course, and escape to the unknown haunts of their race, to return shortly after as *grisles*, along with the more aged individuals. All these seaward migrations of the parent fish and the fry are influenced, and greatly accelerated, by the occurrence of the floods in the rivers.—— The London market, where the consumption is immense, is principally supplied from the Scotch rivers. The Tweed fishery is the first in point of magnitude of any in the kingdom; and such is the abundance, that several hundreds have been frequently taken by a single sweep of the net. When the season is at its height, and the catch greater than can be taken off fresh, it is salted, dried, or pickled, for winter consumption at home. [See FISHERIES.]

SALOON', in architecture, a lofty spacious hall, vaulted at the top, and usually comprehending two stories, with two ranges of windows. In Italy, it is used as a state room in palaces for the reception of ambassadors and other visitors.

SAL'PA, in entomology, a genus of animals, class *Vermes*, order *Mollusca*, having the body tubular, loose, and gelatinous; intestines placed obliquely. They are gregarious, swim with great facility, and have the power of contracting or opening at pleasure the cavities of the extremities.

SALSO'LA, in botany, a genus of plants, class 5 *Pentandria*, order 2 *Digynia*. Plants of this genus derive their name from their salt quality, and are well known for producing the alkaline salt commonly called barilla, soda, or kelp.

SALT, in the popular sense, is a saline crystalization, used to season or preserve meats. This is usually called common salt. Salt is either procured by evaporating seawater, or the water of salt springs; or dug in mines. White salt and bay salt are of the former kind; and fossil or rock salt of the latter. In sea salt prepared by rapid evaporation, the insoluble portion is a mixture of carbonate of lime with carbonate of magnesia, and a fine siliceous sand; and, in the salt prepared from Cheshire brine, is almost entirely carbonate of lime. The insoluble part of the less pure pieces of rock salt is chiefly of a marly earth, with some sulphate of lime. Some estimate of the general proportion of this impurity may be formed from the fact that government, in levying the duties, allowed 65 pounds to the bushel of rock salt, instead of 56 pounds, the usual weight of a bushel of salt. In Caramania, in Asia, Chardin tells us, rock salt is so abundant, and the atmosphere so dry, that the inhabitants use it as stone for building their houses. This mineral is also found on the whole elevated table-land of Great Tartary, Thibet, and Hindostan. Extensive plains in Persia are covered with a saline efflorescence; and, referring to the account of travellers, the island of Ormus, in the Persian gulf, is one large mass of rock salt. According to Hornemann, there is a mass of rock salt spread over the mountains that bound the desert of Lybia to the north, so vast that no eye can reach its termination in one direction, and its breadth he computed to be several miles. Rock salt has also been found in New South Wales. The principal deposit in Great Britain is in Cheshire. The beds alternate with clay and marl, which contain gypsum. It occurs also at Droitwich in Worcestershire. The salt mines in the neighbourhood of Northwich are very extensive. They have been wrought since 1670; and the quantity of salt obtained from them is greater, probably, than is obtained from any other salt mines in the world: but the Cheshire salt, in its solid form when dug from the mine, is not sufficiently pure for use. To purify it, it is dissolved in sea water, from which it is afterwards separated by evaporation and crystalization. The beds or masses of rock salt are occasionally so thick, that they have not been

CONFECTIONERS MELT ICE WITH COMMON SALT, BY WHICH MEANS THEY PRODUCE COLD MUCH GREATER THAN THAT OF THE ORIGINAL ICE.

yet bored through, though mined for many centuries; but it is sometimes disseminated in small masses or little veins among the calcareous and argillaceous marls which accompany or overlie the greater deposit. In the places where there are salt springs, and salt works are carried on at them, the work-house where the salt is made is always called the *wych-house*, and hence it is supposed that *wych* was an old British word for salt, as all the towns in which salt is made end in *wych*; as *Namptwych*, *Droitwych*, *Middlewych*, &c.—There are places in America where the sea occasionally overflows, which, on the water's evaporating, leaves the salt. These are called *licks*, and are the resort of vast crowds of different quadrupeds.

SALTS, or SALINE SUBSTANCES, with respect to their chemical properties, are divided into two classes; into acid salts or acids, and into alkaline salts or alkalies; and from the mutual combination of these two arises a third class, viz. that of neutral salts.——*Acid salts* are distinguished by their sour taste when diluted with water. *Alkaline salts* possess a urinous, burning, and caustic taste, turn the syrup of violets to a green, have a strong affinity for acids, combine with oils and fat, and unite readily with water. *Neutral salts* are so called because they are neither acid nor alkaline; such as Epsom salts, nitre, &c.: but in many secondary salts the qualities of one ingredient predominate.

SALT'IER, in heraldry, one of the eight greater ordinaries; a St. Andrew's cross.

SALTPETRE. [See NITRE.]

SALU'TE, in military discipline, a testimony or act of respect performed in different ways, according to circumstances. In the army, the officers salute by dropping the point of the sword; also by lowering the colours and beating the drums. In the navy, salutes are made by discharges of cannon, striking the colours or top-sails, or by volleys of small-arms. Ships always salute with an odd number of guns; and galleys with an even number. The vessel under the wind of the other fires first.

SAL'VAGE, in commerce, a recompense allowed to such persons as have assisted in saving goods from loss at sea, or ships from shipwrecks, &c.

SALVATEL'LA, in anatomy, the vein which runs along the arm, and terminates in the little finger; so named from *salus*, health, because the opening of it was formerly thought to be of singular use in hypochondriacal affections.

SAMAR'ITAN, an inhabitant of Samaria, or one that belonged to the sect which derived their appellation from that city. After the fall of the kingdom of Israel, the people remaining in its territory, (consisting of the tribes of Ephraim and Manasseh, mingled with some Assyrian colonists), were called Samaritans by the Greeks, from the city of Samaria, around which they dwelt. When the Jews, on their return from captivity, rebuilt the temple of Jerusalem, the Samaritans desired to aid in the work; but their offers were rejected by the Jews, who looked upon them as unclean, on account of their mixture with heathens; and the Samaritans revenged themselves by hindering the building of the city and temple. Hence the hatred which prevailed between the Jews and Samaritans, which, in the time of Jesus, when the latter were confined to a narrow strip of country between Judea and Galilee, prevented all intercourse between them, and still continues. In their religious opinions and usages they resemble those Jews who reject the Talmud, and differ from the rabbinical Jews, in receiving only the Pentateuch and book of Joshua, and in rejecting all the other portions of the Bible, as well as the Talmud and rabbinical traditions: but in their manners, rites, and religious ceremonies, they adhere strictly to the Mosaic law.

SA'MIAN EARTH (from the isle of *Samos*), the name of a species of marl, used in medicine as an astringent.

SA'MIEL, the Arabian name for a hot suffocating wind peculiar to the desert of Arabia. It blows over the deserts in the month of July and August: it approaches the very gates of Bagdat, but is said never to affect a person within its walls. It frequently passes with the velocity of lightning, and there is no way of avoiding its dire effects, but by falling on the ground, and keeping the face close to the earth. Those who are negligent of this precaution experience instant suffocation. [See SIMOON.]

SA'MIUS LA'PIS, or SAMIAN STONE, in mineralogy, a stone brought from the island of Samos, and used by goldsmiths in brightening and polishing gold.

SAMNI'TES, in antiquity, a sort of gladiators who derived their name from their armour. They are mentioned by Cicero and others.

SAM'PHIRE, a plant of the genus *Crithmum*. It grows on rocks near the sea shore, where it is washed by the salt water. It is used for pickling.

SAM'UEL, *The Books of*, two canonical books of the Old Testament, so called, as being usually ascribed to the prophet Samuel. The books of Samuel, and the books of Kings, are a continued history of the reigns of the kings of Israel and Judah.—The first book of Samuel comprehends the transactions under the government of Eli and Samuel, and under Saul the first king; and also the acts of David while he lived under Saul. The second book is wholly occupied in relating the transactions of David's reign.

SAN-BEN'ITO, a kind of linen garment, painted with hideous figures, and worn by persons condemned by the Inquisition. Also a coat of sackcloth used by penitents on their reconciliation to the church.

SANCTIFICATION, in an evangelical sense, the act of God's grace by which the affections of men are purified or alienated from sin and the world, and exalted to a supreme love of God.

SANCTUARY, in a general sense, any sacred asylum; but more especially signify-

SALT MADE PART OF THE PAY OF THE ROMAN SOLDIERS, WHICH WAS CALLED SALARIUM; HENCE OUR WORD SALARY.

THE CONSUMPTION OF SALTPETRE DURING THE TIME OF WAR IS VERY GREAT, AS IT FORMS THE PRINCIPAL INGREDIENT OF GUNPOWDER.

ing THE SANCTUM-SANCTORUM, the most retired part of the temple at Jerusalem, called also the *Holy of Holies*, in which was kept the ark of the covenant, and into which no person was permitted to enter except the high-priest, and that only once a year, to intercede for the people.

SAND, any mass or collection of fine particles of stone, particularly of the siliceous kind, but not strictly reduced to powder or dust. Sand is of great use in the glass manufacture; the white writing sand being employed for making the white glass, and a coarse greenish looking sand for the green glass. In agriculture it seems to be the office of sand to make unctuous earths fertile, and fit to support vegetables, &c.; for earth alone, we find, is liable to coalesce, and gather into a hard coherent mass, as appears in clay.——*Sands*, in the plural, tracts of land consisting of sand, like the deserts of Arabia and Africa.

SAN'DAL, in antiquity, a kind of costly slipper, worn by the Greek and Roman ladies, made of silk or other precious stuffs, and ornamented with gold or silver.

SAN'DAL-WOOD, or SAN'DERS-WOOD, a kind of wood which grows in the East Indies, and is of three kinds, the white, the yellow, and the red. The tree which produces the two former is of the genus *Santalum*. Its wood has a bitter taste and an aromatic smell. The oriental nations burn it in their houses for the sake of its fragrant odour, and with the powder of it a paste is prepared, with which they anoint their bodies. The white is the wood next to the bark; the yellow is the inner part of the tree. The red sandal-wood is obtained from a different tree, the *Pterocarpus santolinus*: it is of a dull red colour, has little taste or smell, and is principally used as a colouring drug.

SAN'DARACH, or GUM SAN'DARACH, a resinous substance exuding from a tree that grows in Barbary, and also from the juniper tree. It is used in powder to prevent ink from sinking or spreading.

SAND'BAGS, bags fitted for holding sand or earth, and used in repairing breaches in fortifications, &c.

SAND'-BOX, in botany, a tree or plant of the genus *Hura*. It is said that the pericarp of the fruit will burst in the heat of the day with a loud report, and throw the seeds to a distance.

SAND'-EEL, in ichthyology, the ammodyte, a fish resembling an eel, but seldom exceeding a foot in length. Its head is compressed, and the body cylindrical, with scales hardly perceptible. It coils with its head in the centre, and penetrates into the sand; whence its name.

SAN'DEVER, or SAN'DIVER, a whitish salt which is cast up from the materials of glass in fusion, and, floating on the top, is skimmed off. A similar substance is thrown out in eruptions of volcanoes. It is used in the fusion of certain ores, and is also employed in medicine.

SAND'PIPER, in ornithology, a bird of the genus *Tringa*.

SAND'STONE, in mineralogy, masses of stone composed chiefly of quartz united by a cement, calcareous, marly, or siliceous. Sandstones usually consist of the materials of older rocks, as granite, broken up and comminuted, and afterwards deposited again.

SANG FROID [Fr. *cold blood*], freedom from agitation or excitement of mind.

SAN'GIAC, the title of a provincial governor in Turkey, next in authority to a bey or viceroy.

SAN'GUINE, in heraldry, an epithet for the dark red colour, represented in engraving by lines hatched across one another diagonally.

SAN'HEDRIM, a word said to be derived from the Greek, and signifying the great public council, civil and religious, of the ancient Jewish republic or hierarchy. This council consisted of seventy elders, who received appeals from other tribunals, and had power of life and death.

SANID'IUM, a genus of fossils of the class of *selenites*, composed of plain flat plates.

SA'NIES, in medicine, a thin acrid discharge of serous matter from wounds or sores.

SAN'SCRIT, the ancient language of Hindostan, from which are formed all the modern languages or dialects of India. In it are written the ancient books of the country, but it is now considered obsolete.

SANS-CULOTTES [Fr. from *sans*, without, and *culottes*, breeches], the name given in derision to the popular party, by the aristocratical, in the beginning of the French revolution of 1789; but though in the first instance applied by way of contempt, yet when the fiercest principles of republicanism prevailed, *sans-culottism* became a term of honour; and some of their bravest generals in their dispatches announcing their victories, gloried in the name.

SAN'TALUM, in botany, a genus of plants, class 4 *Tetrandria*, order 1 *Monogynia*. The single species is the white and yellow sandal-wood.

SANTOLI'NA, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamia æqualis*. The species are shrubs, as the *Absinthium*, or common lavender cotton, &c.

SAP, the juice of plants, which flows chiefly between the wood and the bark. This nutritive substance is collected by the roots with those fibres which form their terminations, and which branch out in every direction, and appear to seek those substances in the soil best qualified to supply the nourishment which it is their province to convey. The juice, or sap, thus extracted from the soil, is drawn up the tree by the efforts of vegetation, each branch and each leaf serving, by its demand for nourishment, as a kind of forcing-pump, to suck the juice up to the topmost shoot, to extend it to all the branches, and, in a healthy tree, to the extremity of each shoot. The roots, in other words, may be considered as the providers of the aliment;

SANDAL-WOOD GROWS PRINCIPALLY IN MALABAR, IN THE MOUNTAINOUS COUNTRY AT A LITTLE DISTANCE FROM THE SEA COAST.

THE WHITE AND PALE BLUE VARIETIES OF THE SAPPHIRE, BY EXPOSURE TO HEAT, BECOME SNOW WHITE, AND RESEMBLE THE DIAMOND.

while the branches, shoots, and leaves may be fairly described as the appetite of the tree, which causes it to consume the food thus supplied to it.

SAP'AJO, in zoology, a division of the genus *Simia*, including such of the monkeys as have prehensile tails.

SAPIEN'TIÆ DEN'TES, or WISDOM TEETH, in anatomy, the two last or inmost of the *dentes molares* of the upper jaw, one on each side; so called because they appear when persons are supposed to be at years of discretion.

SAPONA'RIA, in botany, the *soap-wort*, of which there are nine species. The *Saponaria officinalis* is a British plant, and has a creeping root, so that in a short time it would fill a very large space of ground. A decoction of this plant is used to cleanse and scour woollen cloths: the poorer people in some countries use it instead of soap for washing.

SAPPHIC (pron. *saf'ic*), pertaining to Sappho, a Grecian poetess; as *Sapphic* odes, &c. The Sapphic verse consists of eleven syllables in five feet, of which the first, fourth, and fifth, are trochees, the second a spondee, and the third a dactyl, in the first three lines, of each stanza, with a fourth consisting only of a dactyl and a spondee.

SAP'PHIRE, a precious stone of a fine blue colour. In hardness it is only inferior to the diamond; and the sapphire which is found in the same mines with the ruby, is nearly allied to that gem. They are found in various places; as Pegu, Calicut, Cananor, and Ceylon, in Asia; and Bohemia and Silesia, in Europe. The most highly prized varieties are the crimson and carmine red; these are the oriental ruby of the jeweller: the next is sapphire; and the last is sapphire, or oriental topaz. The asterias, or star-stone, is a very beautiful variety, in which the colour is generally of a reddish violet, with an opalescent lustre.

SAP'PING, in sieges, &c., the act of working underground to gain the descent of a ditch, counterscarp, &c.

SAR'ABAND, a dance and a tune used in Spain, said to be derived from the Saracens.

SAR'COCOL, or SARCOCOLLA, a gum resin brought from Persia and Arabia in small grains of a light yellow or red colour, and supposed to be the product of a tree called by botanists the *penæa sarcocolla*.

SAR'COLITE, a substance of a vitreous nature, and of a rose-flesh colour, found near Vesuvius.

SARCOL'OGY, that part of anatomy which treats of the soft parts of the body, as the muscles, fat, intestines, vessels, &c.

SARCO'MA, any fleshy excrescence on an animal body.

SARCOPH'AGUS, a species of lime-stone of which ancient coffins were made, and which, according to Pliny, had the power of destroying within forty days the corpses put into them. This quality brought the stone into use for coffins, and thus the name came to be applied to all coffins of stone, though often used for a contrary purpose to that which the name expresses. Of the great number of *sarcophagi* which have come down to us, several are known by particular names; as, the sarcophagus of Homer, in the Besborodko gardens at St. Petersburg; and that of Alexander the Great, in the British Museum, once in the mosque of St. Athanasius at Alexandria. It was taken by the British from the French, during their memorable campaign in Egypt.

SARDON'IC LAUGH (*risus sardonicus*), so called from the herb *sardonia*, which being eaten is said to cause a deadly convulsive laughter, or spasmodic grin.

SAR'DONYX, a genus of semi-pellucid gems, of the onyx structure, zoned or tabulated, and composed of the matter of the onyx variegated with that of the red or yellow carnelian.

SAR'GUS, in ichthyology, a fish of the Mediterranean, whose body is variegated with brown transverse rings.

SARMEN'TOUS, in botany, an epithet for a stem that is filiform and almost naked, or having only leaves in branches at the joints or knots, where it strikes root.

SARMENTO'SÆ, in botany, one of Linnæus's natural orders, consisting of plants which have climbing stems and branches, like the vine.

SARSAPARIL'LA, in botany, a plant growing in S. America and the W. Indies; a species of *Smilax*, valued in medicine for its mucilaginous and demulcent qualities.

SAS'SAFRAS, in botany, a tree of the genus *Laurus*, whose bark has an aromatic smell and taste, and is used in medicine.

SAS'SOLINE, in chemistry, native boracic acid, found in saline incrustations on the borders of hot springs near Sasso, in the territory of Florence.

SAS'TRA, among the Hindoos, a book containing sacred ordinances. The six great *Sastras*, in the opinion of the Hindoos, contain all knowledge, human and divine. These are called the Veda, Upaveda, Vedanga, Purana, Dherma, and Dersana.

SAT'ELLITE, in astronomy, a small planet revolving round another. [See ASTRONOMY, PLANET, &c.]

SAT'IN, a soft, closely-woven silk, with a glossy surface. In the manufacture of other silken stuffs, each half of the warp is raised alternately; but in weaving satin, the workman only raises the fifth or the eighth part of the warp; in which way it acquires that lustre and brilliancy which distinguish it from most other kinds of silks. Satin has become of late an article of considerable use for hats. The chief seats of the satin manufacture are Lyons in France, and Genoa and Florence in Italy.

SAT'IRE, in literature, a species of writing, generally poetical, the object of which is always castigation. It presupposes not merely much natural wit, but also acute observation, and much variety of life and manners to call this wit into exercise.

SATURA'TION, in chemistry, expresses that point at which a body ceases to have the power of dissolving another; thus when

THE BARK IS THE ONLY USEFUL PART OF THE SARSAPARILLA ROOT, THE LIGNEOUS PART BEING A TASTELESS, INERT, WOODY FIBRE.

nitric acid has dissolved lime to its fullest extent, it is said to be saturated with lime.

SAT'URDAY, the last day of the week. The Scandinavians, and from them the Saxons, had a deity named *Seater*, from whom the English name of the *dies Saturnii* of the Romans may be derived; but the subject is by no means clear.

SATURE'IA, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. Plants of this genus are garden herbs, well known by the name of savory.

SA'TURN, in astronomy, a very conspicuous planet, though not so brilliant as Jupiter, Venus, or even Mars. Its diameter is nearly 80,000 miles, its distance from the sun 903 millions of miles, and its periodical revolution round that luminary is performed in little less than 30 of our years. Saturn is supposed to have a rotation about its axis in little more than 12 hours; and it is encompassed with two broad rings, which are probably of considerable importance in reflecting the light of the sun to the planet.

SATURNA'LIA, in antiquity, feasts in honour of Saturn. The Saturnalia had their origin in Greece, but by whom they were instituted or introduced among the Romans is not known; but they were celebrated with such circumstances as were thought characteristic of the golden age; particularly the overthrow of distinction and rank. Slaves were reputed masters during the three days of this festivity; were at liberty to say what they pleased; and, in fine, were served at table by their owners. These festivities, in which men indulged in riot without restraint, were held annually about the middle of December.

SAT'URNITE, a metallic substance of recent discovery, separated from lead in torrefaction, resembling lead in its colour, weight, solubility in acids, &c., but more fusible and brittle.

SA'TYR, a sylvan deity or demi-god, represented as a monster, half man and half goat, having horns on his head, a hairy body, with the feet and tail of a goat. Satyrs are usually found in the train of Bacchus, and have been distinguished for lasciviousness and riot.

SAU'CISSE, in the art of war, a long pipe or bag, made of cloth well pitched, or of leather, filled with powder, and extending from the chamber of the mine to the entrance of the gallery. It serves to communicate fire to mines, caissons, bomb-chests, &c.

SAUCISSON'S, in fortification, faggots or fascines, made of great boughs of trees bound together; their use being to cover men, or to make epaulements, &c.

SAU'RIAN, an epithet designating an order of reptiles; pertaining to the lizard species.

SAUS'SURITE, a mineral approaching *andalusite*, of a whitish gray or green colour; named from Saussure, the discoverer.

SAUTEREAU' [Fr.], in mechanics, a term for a small piece of loose wood in a tortoise, which causes certain instruments to go off by means of a feather that is placed in its tongue or languet.

SAUTEREL'LE [Fr.], in mechanics, a term for an instrument used by stone-cutters and carpenters to trace and form angles.

SAVAN'NA, or SAVAN'NAH, an extensive open plain, destitute of trees.

SAX'IFRAGE, in botany, a genus of plants of many species. Also, a medicine that has the reputation of being a solvent for the stone.

SCA'BIES, in medicine, a disease of the skin, accompanied by itching, caused by insects breeding in the parts affected.

SCABIO'SA, in botany, a genus of plants, class 4 *Tetrandria*, order 1 *Monogynia*. Plants of this genus are mostly perennials, as the Alpine scabious, &c.

SCAB'RIDÆ, the 53d Linnæan natural order of plants, with rough leaves; as the fig, hemp, &c.

SCAGLIO'LA, or SCALIO'LA, a mixture of fine gypsum and powdered selenite, made into a paste with glue, and serving to form paintings of a stony hardness. The process is as follows:—Upon a tablet of white stucco (consisting of this gypsum paste), the outlines of the work designed are traced with a sharp instrument, and the cavities thus made are filled up with successive layers of paste, of the same composition, but coloured. It takes a very high polish, and, when executed by a skilful workman, is an admirable imitation of marble.

SCALD, among the ancient Scandinavians, a poet; one whose occupation was to compose poems in honour of distinguished men and their achievements, and to recite and sing them on public occasions.

SCALE, a most useful mathematical instrument, made of any hard material. The principal divisions are half an inch, and the horizontal lines divide it into ten parts, or the 20th of an inch; while by sloping the lines in the left-hand division, the tenths are divided into tenths of tenths, or 100ths of the half inch, by progressively ascending or descending.——*Scale*, in music, a series of sounds rising or falling towards acuteness or gravity.——In geography, a *scale of miles* on a map, for measuring the distances of places.——In arithmetic, *scale of notation*, the order of progression on which any system of arithmetic is founded, as the decennary scale, which computes by tens.——*Scales*, receptacles at the end of two equal levers, to determine the weight of bodies by standard bodies of stamped metal, in pounds, ounces, &c.——Also, alternate layers, as the *scales* of fish, serpents, &c.

SCA'LE-STONE, or SCHAAL'STEIN, a rare mineral, of a grayish or pearly white colour, tinged with green, yellow, or red. It is also called *tafelspath* and *tabular spar*; and is composed of thin laminæ collected into large prismatic concretions.

SCAL'LOP, in ichthyology, a genus of shell-fish called *pecten*. The shell is bi-

valvular, the hinge toothless, having a small ovated hollow.

SCAL'PEL, in surgery, a knife used in anatomical dissections and surgical operations.

SCALP'ING-IRON, or SCALP'ER, an instrument used in surgery for scraping foul and carious bones.

SCAM'MONY, in natural history, a gum-resin, obtained from a plant of that name, of a blackish gray colour, a strong nauseous smell, and a bitter and very acrid taste. It is a strong and efficacious purgative. The best scammony comes from Aleppo in light spungy masses, easily friable.

SCANDALUM MAGNATUM, in law, a defamatory speech or writing made or published to the injury of a person of dignity.

SCAN'NING, in Latin poetry, the examining a verse by counting the feet, to see whether the quantities be duly observed; or, according to modern usage, to recite or measure verse by distinguishing the feet in pronunciation.

SCAPE, in botany, a stem bearing the fructification without leaves, as in the narcissus and hyacinth.

SCA'PE-GOAT, in the Jewish ritual, a goat which was brought to the door of the tabernacle, where the high-priest laid his hands upon him, confessing the sins of the people, and putting them on the head of the goat; after which the goat was turned loose into the wilderness.—Levit. xvi.

SCA'PEMENT, in clock-work, the manner of communicating the impulse of the wheels to the pendulum. Common scapements consist of the swing wheel and pallets only; but modern improvements have added other levers or detents, chiefly for the purpose of diminishing friction.

SCAP'OLITE, a mineral which commonly occurs in four or eight-sided prisms, terminated by four-sided pyramids. It is the radiated, foliated, and compact scapolite of Jameson; but from the variety of aspects under which it has appeared, it has often been mistaken as affording the foundation of several new species.

SCAP'ULA, in anatomy, the shoulder-blade; a bone which approaches nearly to a triangular figure, and is fixed, not unlike a buckler, to the upper, posterior, and lateral part of the thorax, extending from the first to about the seventh rib. The uses of the scapula are to sustain the arms, and join them to the body, to serve for the insertion of several muscles, and to add somewhat to the necessary defence of the parts contained within the thorax.

SCAP'ULAR, in ornithology, the name given to a feather which springs from the shoulder of the wing, and lies along the side of the back.

SCAP'ULARY, a part of the habit of certain religious orders in the Romish church, consisting of two narrow slips of cloth worn over the gown, covering the back and breast, and extending to the feet.

SCARABÆ'US, in entomology, the beetle, a genus of insects of the order *Coleoptera*, of which there are several hundred species. In this country, the *Scarabæus melolontha*, or cock-chafer, is very common. The larva inhabits ploughed lands, and feeds on the roots of corn; and the complete insect makes its appearance during the middle or the decline of summer. This insect sometimes appears in such prodigious numbers, as almost to strip the trees of their foliage, and to produce mischiefs nearly approaching to those of the locust tribe. A species of great beauty is the *Scarabæus auratus*, or golden beetle, about the size of the common or black garden beetle; the colour is most brilliant, highly varnished, and of a golden green.

SCARF'-SKIN, in anatomy, the first and outermost of the three lamina of which the skin is composed, and which is full of pores.

SCARIFICA'TION, in surgery, the operation of making several incisions in the skin with a lancet or a cupping instrument.

SCARLATI'NA, in medicine, the scarlet fever, a genus of diseases in the class *Pyrexiæ*, and order *Exanthemata*, of Cullen, characterized by contagious synocha, and a scarlet eruption appearing on the skin in patches, which, in the progress of the disease, assumes one universal redness, pervading the face, body, and limbs.

SCAR'LET-OAK, in botany, the *Quercus coccifera*, or kermes oak, producing small glandular excrescences, called *kermes* or *scarlet-grain*. It is used for dyeing scarlet.

SCARP, in fortification, the interior talus or slope of the ditch next the place at the foot of the rampart.——In heraldry, the scarf which military commanders wear for ornament.

SCENE, in the drama, has four significations: in its primitive one, it denotes a theatre, the word meaning a tent or booth; in its second, a decoration of a theatre, as the painting exhibited between the acts; in its third sense, a scene is the place in which the action is performed, as in a room or in a garden; and in its fourth, it means that portion of a drama which belongs to the same person or persons, in one place.

SCE'NERY, the appearance of the various objects presented to our view; as, the *scenery* on the banks of the Thames at Richmond is diversified and pleasing; or, the landscape scenery presented to the view from the Malvern hills is picturesque and varied.——The paintings representing the scenery of a play.

SCENOG'RAPHY, in perspective, stands opposed to ichnography and orthography. *Ichnography* is the ground-plan; *orthography*, the elevation or a flat view of a front of an object; and *scenography*, is the perspective view, which takes several sides, and represents everything in its apparent proportions.

SCEPTICISM, also called *Pyrrhonism* (from its founder, Pyrrho, who lived under Alexander the Great), the doctrine of a sect of philosophers, who maintained that no certain inferences can be drawn from the senses, and who therefore doubted of everything.——In theology, *scepticism* is a de-

AMONG THE EGYPTIANS, THE "SCARABÆUS SACER" PASSED AS THE SYMBOL OF IMMORTALITY, AND AS THE EMBLEM OF THE SUN.

CHILDREN AND YOUNG PERSONS ARE MOST SUBJECT TO SCARLET FEVER, AND IT IS MOST COMMON TOWARDS THE END OF AUTUMN.

nial of the divine origin of the Christian religion, or of the being, perfections, or truth of God. [See PHILOSOPHY.]

SCEP'TRE, a short staff, the emblem of sovereign power. It is an ensign of royalty of greater antiquity than the crown. It was at first an unornamented staff, or baton, but afterwards became covered with ornaments in ivory, gold, &c. At the present time the sceptre and ball form the two most important emblems of royal and imperial power.

SCHED'ULE, in law, a scroll of paper or parchment appended to a will or any other deed. Also an inventory of goods, &c.

SCHE'LIUM, or SCHEE'LIN, in mineralogy, names by which *tungsten* is sometimes called. It is a hard brittle metal of a grayish white colour, and brilliant.

SCHENE, in antiquity, an Egyptian measure of length, equal to sixty stadia, or about seven miles and a half.

SCHERO'MA, in medicine, a dryness of the eye from the want of the lachrymal fluid.

SCHE'SIS, in medicine, an appellation designating the general state or disposition of the body or mind.——In rhetoric, a figure of speech whereby a certain affection or inclination of the adversary is feigned on purpose to be answered.

SCHIL'LER-SPAR, a mineral containing two sub-species, bronzite and common schiller-spar. It frequently occurs intermingled with serpentine, and when exposed to a high degree of heat, it becomes hard, and forms a porcelain-like mass.

SCHISM, in a theological sense, a division or separation in a church or denomination of Christians; or breach of unity among people of the same religious persuasion. Hence, one who separates from an established church or religious faith is termed a *schismatic*.——In scripture, the word *schism* seems to denote a breach of charity, rather than a difference of doctrine.

SCHIST, or SHIST'US, a name given to different kinds of stones, but particularly those of the argillaceous kind.

SCHOLAS'TICS, a class of philosophers or *schoolmen*, who arose in the middle ages, and taught a peculiar kind of philosophy, which consisted in applying the ancient dialectics to theology, and intimately uniting both. On account of the excessive subtilty which prevailed in the scholastic philosophy, the expression *scholastic* has been used for the extreme of *subtilty*. After the Reformation and the revival of letters, the system gradually declined, till it gave place to the enlightened philosophy of lord Bacon and the great men who have followed in his track and carried out his principles.

SCHO'LIA, notes or annotations on an ancient author.——*Scholiast*, one who writes *scholia*, for the purpose of illustrating ancient authors.

SCHOOL, a house or place of rendezvous for pupils or students to receive instruction in various arts and branches of useful and necessary knowledge. In modern usage, the word *school* comprehends every place of education, whether a college, an academy, a primary school, or a school for learning any single art or accomplishment. "The changes which have taken place in science, and in the whole condition of modern nations, who are no longer dependent, like those of the middle ages, for their means of intellectual culture, on the remains of ancient civilization, necessarily make the character of school instruction very different from what it was formerly, when the whole intellectual wealth of Europe was contained in two languages; and though these noble idioms will always retain a high place in a complete system of education, yet their importance is comparatively less, while that of the natural sciences, history, geography, politics, &c. has very much increased. All this has had a great influence upon schools, and will have a still greater. The importance of education, moreover, is now set in strong relief by the general conviction, entertained in free countries, that the general diffusion of knowledge is the only true security for well-regulated liberty, which must rest on a just sense of what is due from man to man; and few results can be attained by the student of history and of mankind more delightful than this of the essential connexion of light and liberty; not that great learning necessarily leads to liberty; history affords many instances which disprove this; but that a general diffusion of knowledge always tends to promote a general sense and love of what is right and just, as well as to furnish the means of securing it." For the foregoing remarks, which are not less forcible than apparent, we are indebted to Blackie's edition of the Conversations Lexicon.—— *School*, among painters, the style and manner of painting among the great masters of the art at any particular period, as the Italian, Flemish, Dutch, Spanish, and English schools.—— *School*, in philosophy, a system of doctrine as delivered by particular teachers, as the *Platonic school*, the *school of Aristotle*, &c. ——Also, the seminaries for teaching logic, metaphysics, and theology, which were formed in the middle ages, and which were characterized by academical disputations and subtilties of reasoning. Hence *school divinity* is the phrase used to denote that theology which discusses nice points, and proves everything by argument.

SCHOON'ER, a vessel with two masts, whose main-sail and fore-sail are suspended by gaffs, like a sloop's main-sail, and are stretched below by booms.

SCIAG'RAPHY, in architecture, a profile or section of a building to exhibit its interior structure.——In astronomy, the art of finding the hour of the day or night by the shadows of objects, caused by the sun, moon, or stars.

SCIAT'IC *Artery*, in anatomy, a branch of the internal iliac.——*Sciatic Nerve*, a branch of a nerve of the lower extremity, formed by the union of the lumbar and sacral nerves.——*Sciatic Vein*, the vein which accompanies the sciatic artery in the thigh.

WESTMINSTER SCHOOL, WITH FORTY SCHOLARSHIPS, WAS FOUNDED BY QUEEN ELIZABETH, IN 1560.

IN THE MIDDLE AGES, BESIDES THE TWO UNIVERSITIES, THE EDUCATION OF YOUTH WAS PROVIDED FOR BY THE EPISCOPAL SCHOOLS.

LITERARY AND SCIENTIFIC INSTITUTIONS DISSEMINATE A VAST FUND OF KNOWLEDGE OF THE MOST INTERESTING DESCRIPTION.

SCI'ENCE, the regular development of any branch of knowledge. It perfects genius, and moderates those ebullitions of the fancy which are apt to overstep the bounds of reason. The difference between science and art is, that the first is speculative, and the second mechanical. Science plans, and art performs; for instance, the *theory* of music is a *science;* the *practice* of it an *art.* Science gives data; philosophy draws conclusions.——*Pure* science, as the *mathematics,* is built on self-evident truths; but the term science is also applied to other subjects founded on generally acknowledged truths, as *metaphysics;* or on experiment and observation, as *chemistry* and *natural philosophy;* or even to an assemblage of the general principles of an art, as the science of *agriculture.*——The chief object of science is the discovery of truth, and of art the development of beauty. In the former we trust to reason, and in the latter to imagination. But judgment and fancy are of mutual assistance in both studies. Science clears the obstructions which impede the progress of art, and art adorns and smooths the path of science. No discovery is made without some previous conjectural effort of the mind, some exertion of the imagination; nor is any beauty unfolded where there has not been some pre-consideration of probable effects, some exertion of the reasoning faculties. As the human mind is pleased with the contemplation of what is true, and delighted with the appearance of what is beautiful, it may be assumed that the cultivation of science, and the improvement of art, originated in our love of pleasure. We commonly divide the objects of the two pursuits into distinct classes; and we think, when we call scientific studies useful, and the productions of art only ornamental, that there is something intrinsically different in their respective natures. But if we examine our own feelings, and judge of science by its influence on ourselves, we shall be obliged to confess, that although less obviously, it is, in fact, as much recommended to us by the pleasures to which it ministers, as those arts that we regard as entirely devoted to the excitement of agreeable emotions.

SCIL'LA, in botany, a genus of plants, class 6 *Hexandria,* order 1 *Monogynia.* Plants of this genus are bulbous, and consist of the different varieties of the Squill.

SCI'ON, or CI'ON, a graft or young shoot of a tree.

SCIOP'TICS, the science of exhibiting images of external objects received through a double convex glass into a darkened room. ——*Scioptic,* a sphere or globe of wood with a hole in which is placed a lens, so constructed that it may be turned round every way, and used in making experiments with the camera obscura.

SCI'RE FA'CIAS, in law, a judicial writ summoning a person to show cause to the court why something should not be done; as, to require sureties to show cause why the plaintiff should not have execution against them for debt and damages, or to require a third person to show cause why goods in his hands by replevin, should not be delivered to satisfy the execution, &c.

SCITAMIN'EÆ, the eighth Linnæan natural order of plants, including turmeric, ginger, cardamoms, and other aromatics.

SCIU'RUS, in zoology, a genus of animals, class *Mammalia,* order *Glires.* The species consist of the various kinds of squirrel.

SCLAVO'NIAN, or SCLAVON'IC, pertaining to the *Sclavi,* or their language—a people that anciently inhabited the country between the rivers Save and Drave. Hence the word came to denote the language which is now spoken in Poland, Hungary, Bohemia, &c.

SCLEROT'ICA, in anatomy, one of the tunics or coats of the eye: it is hard, opaque, and extended from the cornea to the optic nerve; its anterior part, which is transparent, is called the cornea.——Medicines which harden and consolidate the parts to which they are applied are termed *sclerotics.*

SCO'LEX, in entomology, a genus of animals, class *Vermes,* order *Intestina,* having the body gelatinous and variously shaped; the head prehensile and retractile.

SCO'LOPAX, in ornithology, a genus of birds of the order *Grallæ.* The species include the woodcock, snipe, curlew, &c.

SCOLOPEN'DRA, in entomology, a genus of insects of the order *Aptera,* destitute of wings, but having as many feet on each side as there are segments in the body.

SCOM'BER, in ichthyology, the mackerel [which see].

SCORE, in music, the original draught of the whole composition, wherein the several parts are distinctly scored and marked.

SCO'RIA, in metallurgy, the dross or recrements of metals in fusion; or, more strictly speaking, that vitreous mass which is produced in melting metals and ores, and which when cold is brittle, and not dissoluble in water. Hence, *scoriaceous,* pertaining to dross; and *scorification,* the operation of reducing a body into scoria.

SCORPÆ'NA, in ichthyology, a genus of fishes of the thoracic order. They inhabit the Mediterranean in shoals, hide themselves among the sea-weed, prey on fish or crabs, and, when touched, erect themselves, and wound with the spines of the dorsal fin.

SCOR'PIO, one of the signs of the zodiac, which the sun enters on the 23rd of October. ——*Scorpio,* the name of an ancient military engine, used chiefly in the defence of the walls of a town. It resembled the balista in form, consisting of two beams bound together by ropes, from the middle of which rose a third beam, called the *stylus,* so disposed as to be pulled up and let down at pleasure. On the top of this were fastened iron hooks.——*Scorpio* was the name also of a sort of scourge, which was furnished with small spikes that lacerated the body of the sufferer.

SCOR'PION, in zoology, a genus of wingless insects, containing several species. The tail of the *scorpion* is long and slender, end-

SCORPIONS CARRY THEIR YOUNG ON THE BACK, IN ORDER TO PROTECT THEM BY MEANS OF THE STING AT THE END OF THEIR TAIL.

ing in a pointed weapon or sting, and the whole body is covered with a firm and somewhat hard skin: it has eight eyes, three on each side of the thorax and two on the back, eight feet, and two claws in front. It is found in the south of Europe, where it seldom exceeds four inches in length; but in tropical climates it grows to the length of a foot, and in shape much resembles a lobster. The sting of the larger kinds is much dreaded, and is sometimes fatal to life.——*Water-scorpion*, an aquatic insect of the genus *Nepa*.

SCOT, in law, a customary contribution laid upon all subjects according to their ability. Whoever were assessed to any contribution, though not by equal portions, were said to pay scot and lot.

SCOTISTS, a sect of school-divines and philosophers, thus called from their founder, J. Duns Scotus, a cordelier, who maintained the immaculate conception of the virgin, or that she was born without original sin, in opposition to Thomas Aquinas and the Thomists.

SCREW, one of the six mechanical powers, consisting of a spiral thread or groove cut round a cylinder: when the thread is on the outside it is a male or convex screw; but when it is cut along the inner surface of the cylinder it is a female screw, otherwise called a nut.——*Archimedes' Screw*, in hydraulics, a kind of spiral pump for raising water, so called from its inventor Archimedes.——The *Archimedean screw* has lately been introduced in steam navigation, in order to supersede the use of the cumbrous machinery of paddle boxes at the sides of the vessels, and from the success of the experiment there is reason to expect its general adoption.

SCRIBE, a principal officer in the Jewish law, whose business was to write and interpret scripture. Originally they had their name from their employment, which was transcribing the law, and multiplying copies of it; but in time they exalted themselves into public ministers and expositors of it.

SCRIPTURE, or the Holy Scriptures, an appellation given, by way of eminence, to the sacred and inspired writings of the Old and New Testaments. Instead of entering into a history of the various books which form the sacred volume (brief notices of such being given under their respective titles), we shall quote a few sentences from Dr. Chalmers, on the supreme authority of the Scriptures:—"The great bulk of Christians," he observes, "have no access to the Bible in its original languages; but they have access to the common translation, and they may be satisfied, by the concurrent testimony of the learned among the different sectaries of this country, that the translation is a good one. We do not confine the principle to critics and translators; we press it upon all. We call upon them not to form their divinity by independent thinking, but to receive it by obedient reading, to take the words as they stand, and submit to the plain English of the Scriptures which lie before them. It is the office of a translator to give a faithful translation of the original. Now that this faithful representation has been given, it is our part to peruse it with care, and to take a fair and a faithful impression of it. It is our part to purify our understanding of all its previous conceptions. We must bring a free and unoccupied mind to the exercise. It must not be the pride or the obstinacy of self-formed opinions, or the haughty independence of him who thinks he has reached the manhood of his understanding. We must bring with us the docility of a child, if we want to win the kingdom of heaven. It must not be a partial, but an entire and unexcepted obedience. There must be no garbling of that which is entire, no darkening of that which is luminous, no softening down of that which is authoritative or severe. The Bible will allow of no compromise. It professes to be the directory of our faith, and claims a total ascendancy over the souls and the understandings of men. It will enter into no composition with us or our principles. It challenges the whole mind as its due, and it appeals to the truth of heaven for the high authority of its sanctions. * * * We do all homage to modern science, nor do we dispute the loftiness of its pretensions. But we maintain that, however brilliant its career in those tracts of philosophy where it has the light of observation to conduct it, the philosophy of all that lies without the field of observation is as obscure and inaccessible as ever. We maintain that, to pass from the motions of the moon to an unauthorized speculation upon the chemistry of its materials, is a presumption disowned by philosophy. We ought to feel that it would be a still more glaring transgression of all her maxims, to pass from the brightest discovery in her catalogue, to the ways of that mysterious Being whom no eye hath seen, and whose mind is capacious as infinity. The splendour and the magnitude of what we do know can never authorize us to pronounce upon what we do not know; nor can we conceive a transition more violent, or more unwarrantable, than to pass from the truths of natural science to a speculation on the details of God's administration, or the economy of his moral government. Instead of theorising upon the nature and properties of that divine light which irradiates the throne of God, and exists at so immeasurable a distance from our faculties, let us point our eyes to that emanation which has actually come down to us. Instead of theorising upon the counsels of the divine mind, let us go to that volume which lighted upon our world nearly 2000 years ago, and which bears the most authentic evidence that it is the depository of part of these counsels. Let us apply the proper instrument to this examination. Let us never conceive it to be a work of speculation or fancy. It is a pure work of grammatical analysis. It is an unmixed question of language. The commentator who

THE PROPHETS BORROWED THEIR IMAGERY FROM THE MOST SPLENDID OBJECTS AND THE MOST STRIKING REVOLUTIONS IN NATURE.

opens this book with the one hand, and carries *his system* in the other, has nothing to do with it. We admit of no other instrument than the vocabulary and the lexicon. The man whom we look to is the Scripture critic, who can appeal to his authorities for the import and significancy of phrases, and, whatever be the strict result of his patient and profound philology, we submit to it. We call upon every enlightened disciple of lord Bacon to approve the steps of this process, and to acknowledge that the same habits of philosophizing to which science is indebted for all her elevation in these latter days, will lead us to cast down all our lofty imaginations, and bring into captivity every thought to the obedience of Christ."

SCROPH'ULA, in medicine, a disease indicated by hard indolent tumours of the conglobate glands in various parts of the body, but particularly in the neck, behind the ears, and under the chin, which after a time suppurate and degenerate into ulcers.

SCRU'TINY, in law, an examination of suffrages or votes at an election, for the purpose of ascertaining whether they are good or not.——In the primitive church, an examination of catechumens who were to receive baptism on Easter-day.

SCULP'TURE, the art of giving form and expression, by means of the chisel and other implements, to masses of stone or other hard substances, so as to represent figures of every description, animate and inanimate. It is generally thought that sculpture had its origin from idolatry, as it was found necessary to place before the people the images of their gods to enliven the fervour of their devotion. But to form conclusions concerning the rise and progress of the arts and sciences, without the aid of historical evidence, by analogies which are sometimes accidental, and often fanciful, is a mode of reasoning which, at best, must ever be liable to suspicion. In whatever country the earliest attempts were made, the Egyptians were the first who adopted a certain style of art. Their works were gloomy and grave, but still they were full of deep sentiment, and connected, as would appear by the hieroglyphics which covered them, with poetry and history, and by the mummies, with the belief of immortality. Interesting as the subject would doubtless prove, it is far beyond our limited means to trace the progress of this beautiful art through all its stages in the classic days of Greece, till its decline in Rome, where, though all the treasures of the Grecian sculptors had been carried to deck the Roman capital, the art never became naturalized. During the long and gloomy interval of barbarism that succeeded the downfall of imperial Rome, sculpture, with the sister arts, lay dormant and forgotten. At length, however, through the genius of Michael Angelo Buonarotti, and the skill and perseverance of some of his distinguished successors, seconded by the patronage of the illustrious house of Medici, the treasures of antiquity were collected, and modern art nobly tried to rival the grace and sublimity which existed in the ancient models. Though till within the last century it could hardly be said that a British school of sculpture existed, yet the talent that has been successfully called into action has produced many works of sterling merit; and had we no other names to boast of than those of Flaxman, Chantrey, Baily, and Westmacott, these alone would be sufficient to redeem the national character in this department of art. The sculptor's art, as Sir Joshua Reynolds observes, is limited in comparison of others, but it has its variety and intricacy within its proper bounds. Its essence is correctness: and when to correct and perfect form is added the ornament of grace, dignity of character, and appropriate expression, as in the Apollo, the Venus, the Laocoön, the Moses of Michael Angelo, and many others, this art may be said to have accomplished its purpose.

SCUP'PERS, or SCUPPER-HOLES, in a ship, channels cut through the waterways and sides of a vessel at proper distances, and lined with lead for carrying off the water from the deck.——*Scupper-hose*, a leathern pipe attached to the mouth of the scuppers of the lower deck of a ship, to prevent the water from entering.

SCURVY (*scorbutus*), in medicine, a disease characterized by great debility, a pale bloated face, livid spots on the hands and feet, weakness in the legs, offensive breath, &c. The scurvy is a disease of a putrid nature, much more prevalent in cold climates than in warm ones, and very generally arises from eating too much salt provisions. It has been found, that in the cure of this disease much more is to be done by regimen than medicines, and that those articles are especially useful, which contain a native acid, as oranges, lemons, &c.

SCURVY-GRASS, in botany, a plant of the genus *Cochlearia*. It grows on rocks near the sea, has an acrid, bitter taste, and, when eaten raw as a salad, is considered an excellent remedy for the scurvy.

SCU'TAGE, in English history, a tax or contribution levied upon those who held lands by knight-service.

SCUTTLE, a small hatchway or opening in the deck of a ship, large enough to admit a man, and with a lid for covering it; also a similar hole in the side of a ship, and through the covering of her hatchways, &c.

SCU'TUM, in antiquity, a sort of buckler of both an oblong and an oval form.

SCYL'LA, a rock in the sea between Sicily and Italy, which was very formidable to the mariners among the ancients. It was opposite to the whirlpool Charybdis.

SCYTHE, an instrument for mowing. It consists of a thin steel blade attached at right angles to a handle of six or eight feet long. For cutting corn there is frequently the addition of what is called a cradle.

SEA, in geography, is sometimes used for the ocean, or that vast tract of water encompassing the whole globe; but, more properly, for a particular part or division of

the ocean; as the Irish Sea, the Mediterranean Sea, the Red Sea, the Sea of Marmora or the Black Sea, and the Baltic. [See OCEAN.]

SE'A-CALF, in zoology, the common seal, a species of *Phoca*.

SE'A-GULL, in ornithology, a species of gull, a fowl of the genus *Larus*.

SE'A-HARE, a marine animal of the genus *Laplysia*, whose body is covered with membranes reflected; it has a lateral pore on the right side, and four feelers resembling ears. The body is nearly oval, soft, gelatinous, and punctated. Its juice is poisonous, and it is in the highest degree fetid.

SEA-HEDGEHOG, in conchology, a sea-shell, being a species of Echinus; so called from its prickles, which somewhat resemble those of the hedgehog or urchin.

SE'A-HOLLY, in botany, a plant of the genus *Eringyum*.

SE'A-HORSE, in zoology, the Morse, a species of Walrus. Also, a kind of needle-fish, four or five inches long.

SE'A-KAIL, or SE'A-CALE, in botany, a plant of the genus *Crambe*. The whole plant is entirely smooth and glaucous; the stems are about two feet high and branching, bearing fleshy leaves, some pinnatifid, and others sinuate, undulate, and crisped. Its introduction into gardens as a culinary vegetable is but of recent date; but it is now very common as such in most parts. It should be planted in a deep sandy soil, and blanched either by sand, ashes, litter, or by covering with flower pots. No plant is so easily forced; and, unlike asparagus, it yields produce the first spring after raising from seed.

SEAL, in zoology, an amphibious animal of the genus *Phoca*, inhabiting the Caspian Sea, and many of the coasts of the ocean. Seals have six cutting teeth in the upper jaw, and four in the lower. Their hind feet are placed at the extremity of the body, in the same direction with it, and serve the purpose of a caudal fin; the fore feet are also adapted for swimming, and furnished each with five claws. There are numerous species, as the *leonina*, sometimes 18 feet in length, and the *jubata*, sometimes 25 feet in length, with a mane like a lion, both called *sea-lion*, and found in the southern seas, and also in the N. Pacific; the *ursina*, or sea bear, about 8 feet in length, and covered with long, thick, and bristly hair, found in the N. Pacific; and the common seal *(Phoca vitulina)*, from 4 to 6 feet in length, found generally throughout the Atlantic, and the seas and bays communicating with it, covered with short, stiff, glossy hair, with a smooth head without external ears, and with the fore legs deeply immersed in the skin. When it comes on shore, the method of taking it is, by knocking it down with a long club. This creature is gregarious; and when attacked, its companions come to its assistance. Their courage, however, only enables the fisherman to increase his booty. The seal not only furnishes food for the Esquimaux's table, oil for his lamp, and clothing for his person; but even the bones and skin supply materials for his light portable boats and his summer tents. It has been remarked that the brain of this animal is of greater proportionate magnitude than in any quadruped; and that not only does it exhibit in its countenance the appearance of sagacity, but its intelligence is in reality far greater than in most land quadrupeds. Dr. Harwood observes, that, aware of its disposition to become familiar, and its participation in the good qualities of the dog, it is astonishing that mankind have not chosen this intellectual and finely-organized quadruped, for aquatic services scarcely less important than some of those in which the dog is employed on land.——The operation of taking seals and curing their skins, is called *sealing;* and a voyage made for that purpose is called a *sealing-voyage*.

SEAL, in law, the impression or device printed on wax which is put to any deed by way of ratification. The *great seal* is the seal used for the united kingdom of England and Scotland, and sometimes of Ireland. The *privy seal* is that which the king uses to such grants, &c. as pass the great seal. The following is a short description of the new great seal, which has been beautifully executed by Mr. Benjamin Wyon, chief engraver of Her Majesty's Mint.—Obverse: An equestrian figure of Her Majesty, attended by a page. The queen is supposed to be riding in state; over a riding habit she is attired in a large robe or cloak, and the collar of the order of the Garter; in her right hand she carries a sceptre, and on her head is placed a royal tiara or diadem. The attendant page, with his hat in his hand, looks up to the queen, whilst gently restraining the impatient courser, which is richly caparisoned with plumes and trappings. The inscription, "Victoria Dei Gratia Britanniarum Regina, Fidei Defensor," is engraved in Gothic letters, and the spaces between the words are filled with heraldic roses.—Reverse: The queen, royally robed and crowned, holding in her right hand the sceptre, and in her left the orb, is seated upon the throne, beneath a rich Gothic canopy; at the sides are figures of Justice and Religion; and in the exergue are the royal arms and crown; the whole encircled by a wreath, or border of oak and roses. ——*Seal*, a piece of metal having coats of arms or some other device engraven upon it; also the print in wax made by the seal.

SE'A-LEMON, a marine animal of the genus *Doris*, having an oval body, convex, marked with numerous punctures, and of a lemon colour.

SEAL'ING-WAX, a composition of gum lac, melted and incorporated with resin, to which some pigment is added to give it the required colour, as vermillion, ivory black, verditer, &c. Gold sealing-wax is made simply by stirring gold-coloured mica spangles into the melted resin. This is an article that is much adulterated.

SE'A-LION, in zoology, the *Phoca jubata*, a marine animal which has a mane like a lion.

SEALS IN FINE WEATHER PREFER THE ICE TO THE WATER, AND VAST NUMBERS OF THEM ARE TAKEN BY THE HUNTERS ON THE FIELD-ICE.

SE'AMAN, an individual engaged in navigating ships or other vessels upon the high seas. Various regulations have been enacted with respect to the hiring of seamen, their conduct, and the payment of their wages; but these particulars are too numerous for insertion here, and not within the scope of this work.

SE'AMANSHIP, an acquaintance with the art of managing and navigating a ship; applicable both to officers and the men, and indispensably necessary in those who have the ship under their command.

SE'A-MEW, in ornithology, a species of gull, a marine fowl of the genus *Larus*.

SE'A-NEEDLE. [See GARFISH.]

SE'A-OTTER, in zoology, a species of otter that has hind feet, resembling the seal. It feeds on shell-fish.

SE'A-PIE, or SE'A-PYE, in ornithology, a fowl of the genus *Hæmatopus*, and order *Grallæ*; called also the oyster-catcher, from its thrusting its beak into the oysters when open, and taking out the fish.

SEA-SERPENT. At various times within the last quarter of a century, the public have been entertained with marvellous stories respecting an enormous marine animal seen on the coasts of America, of a size and length varying according to the opinions of those who assert that they have witnessed it, some declaring it 100 feet long, while others describe it as being nearly as many yards. All accounts, however, agree in regard to the protuberances on its back, its vertical sinuosities, and its serpent-shaped head. As there is no absolute reliance to be placed on any of the descriptions of this marine monster, we think it merely necessary thus to notice it; and we beg to refer our readers to the article "KRAKEN" in this volume.

SEA-SICKNESS, a disorder incident to most persons on their first going to sea, occasioned by the agitation of the vessel. In voyages, sea-sickness, though it continues in general only for the first day or two, is extremely harassing to some people at intervals, especially on any increased motion of the vessel. The ancient writers recommend acid fruits, or bread and vegetables soaked in vinegar, after the stomach has been cleansed by vomiting, but not before. An old remedy for sea-sickness, and a very common one among sailors, is a draught or two of sea-water, which though disagreeable enough, at such a time too, generally produces the desired effect.

SE'ASONS, the four divisions or portions of the year, namely, Spring, when the sun enters Aries; Summer, when he enters Cancer; Autumn, when he enters Libra; and Winter, when he enters Capricorn. The diversity of the seasons depends upon the oblique position of the sun's path through the heavens, whereby this luminary rises to different heights above the horizon, making the day sometimes longer, and sometimes shorter than the nights. When the sun rises highest at noon, its rays fall most nearly in the direction of a perpendicular, and consequently a greater number is received upon a given spot; their action also, at the same time, continues the longest. These circumstances make the difference between summer and winter. It is found that the sun does not rise so high in summer, nor descend so low in winter, at the present time as it did formerly; in other words, the obliquity of the ecliptic, which is half the difference between the sun's greatest and least meridian altitudes, is growing less and less continually, and the seasons are thus tending, though slowly, to one unvaried spring. [See PRECESSION OF THE EQUINOXES.]

SE'A-URCHIN, in ichthyology, a genus of marine animals, the Echinus of many species. The body is roundish, covered with a bony crust, and often set with movable prickles. [See ECHINUS.]

SE'A-WOLF, in ichthyology, a fish of the genus *Anarraicas*, so named from its fierceness and ravenousness, found in northern latitudes, about Greenland, Iceland, Norway, Scotland, &c. It grows to the length of four or six feet, and feeds principally on shell-fish.

SEBA'CEOUS GLANDS, in anatomy, small glands seated in the cellular membrane under the skin, which secrete the sebaceous humour. This *sebaceous humour* is a suet-like or glutinous matter, which serves to defend the skin and keep it soft.

SEBA"CIC, in chemistry, an epithet for that which pertains to or is obtained from fat; as *sebacic acid*, which is an acid obtained from tallow.

SEBESTAN, in botany, the Assyrian plum, a plant of the genus *Cordia*, a species of jujube.

SE'CANT, in geometry, a line that cuts another, or divides it into two parts. The *secant of a circle* is a line drawn from the circumference on the side, to a point without the circumference on another.——In trigonometry, a secant is a right line drawn from the centre of a circle, which, cutting the circumference, proceeds till it meets with a tangent to the same circle.

SEC'OND, in geometry, chronology, &c. the sixtieth part of a minute, whether of a degree, or of an hour; it is denoted by two small accents, thus (").——In music, an interval of a conjoint degree, being the difference between any sound and the next nearest sound above or below it.——One who attends another in a duel to aid him, and see that all the proceedings between the parties are fair.——*Second terms*, in algebra, those where the unknown quantity has a degree of power less than it has in the term where it is raised to the highest.

SEC'ONDARY, or FLOETZ ROCKS, in geology, those masses of stone and organic substances which are situated over or above the primitive or transition rocks, being dissolved and deposited in strata, consisting of old red sand-stone, floetz lime-stone, floetz gypsum, variegated sand-stone, shell lime-stone, rock salt, chalk formation, floetz trap formation, and coal formations. They abound with organic remains or petrifactions, and are supposed to be me-

chanical deposits from water.——*Secondary circles*, in astronomy, are circles passing through the poles of some great circle: thus the meridians and hour-circles are secondaries to the equinoctial. There are also *secondaries* passing through the poles of the ecliptic, by means of which all stars are referred to the ecliptic.——*Secondary qualities*, are the qualities of bodies which are not inseparable from them, but which proceed from casual circumstances, such as colour, taste, odour, &c.

SECOND SIGHT, a superstitious notion, prevalent in the Highlands of Scotland, by which certain persons are supposed to be gifted with a kind of supernatural sight, or the power of seeing future or distant events as if they really happened.

SEC'RETARY, an officer whose duty it is to write letters and other instruments, for and under the orders and authority of a public body or an individual.——*Secretary of State*, in British polity, an officer of the crown who transacts and superintends the affairs of a particular department of government. There are three principal secretaries of state. They are members of the privy-council, and have authority to commit persons for treason, and other offences against the state, as conservators of the peace at common law, or as justices of the peace throughout the kingdom.

SECRE'TION, the process by which a gland, or set of vessels in the animal or vegetable system, changes a fluid of one quality into a fluid of another quality. The organs of secretion in the animal economy are of very various form and structure, but the most general are those denominated *glands*.

SECT, a collective term for a body of persons adhering to some philosophical or religious system, but constituting a distinct party by holding sentiments different from those of other men. Most *sects* have originated in a particular person, who taught and propagated some peculiar notions in philosophy or religion, and who is considered to have been its founder.

SECTA'RIAN, one of a party in religion which has separated itself from the established church, or which holds tenets different from those of the prevailing denomination in a kingdom or state.

SEC'TILE, a term for a mineral that is midway between the brittle and the malleable, as soapstone and plumbago.

SEC'TION, in general, denotes a distinct part or portion of something which is divided, or the division itself. Such are the subdivisions of a chapter, called also paragraphs and articles.——*Section*, in geometry, a side or surface of a body or figure cut off by another; or the place where lines, planes, &c. cut each other.——*Section of a building*, in architecture, is the same with its *profile*; or a delineation of its heights and depths raised on a plane, as if the fabric was cut asunder to discover its inside.

SEC'TOR, in geometry, a part of a circle comprehended between two radii and the arch; or a mixed triangle, formed by two radii and the arch of a circle.——A mathematical instrument so marked with lines of sines, tangents, secants, chords, &c. as to fit all radii and scales, and useful in finding the proportion between quantities of the same kind.

SEC'ULAR, something that is temporal, in which sense the word stands opposed to *ecclesiastical:* thus we say, secular power, secular jurisdiction, &c. Among catholics, *secular* is more peculiarly used for an ecclesiastic who lives at liberty in the world, not confined to a monastery, nor bound by vows, or subjected to the particular rules of any religious community; in which sense it stands opposed to *regular*. Thus we say, the *secular* clergy, and the *regular* clergy. ——The act of rendering secular the property of the clergy, is called *secularization*.

SEC'ULAR GAMES (*ludi seculares*), in antiquity, solemn games held among the Romans once in an age or century. They lasted three days and three nights, during which time sacrifices were performed, theatrical shows exhibited, with combats, sports, &c. in the circus. The first who had them celebrated at Rome was Valerius Publicola, the first consul created after the expulsion of the kings. At the time of the celebration of the secular games, heralds were sent throughout all the empire, to intimate that every one might come and see those solemnities which he never yet had seen, nor would ever see again.

SECUN'DUM ARTEM, (*Lat.*) according to the rules of art.——In medicine, a term frequently used in prescriptions to denote that the recipe must be made up with particular care.——*Secundum naturam*, according to the course of nature.

SECUTO'RES, in antiquity, a description of gladiators among the Romans, who fought against the *retiarii*. The *secutores* were armed with a sword and a buckler, to keep off the net or noose of their antagonists, and they also wore a casque. This name was also given to such gladiators as took the place of those killed in the combat, or who fought the conqueror.

SED'ATIVES, medicines which have the power of diminishing animal energy without destroying life. At the present day the sedative influence of medicine is generally denied.

SE DEFENDEN'DO, in law, a plea used for one who is charged with the death of another, by alleging that he was under a necessity of committing the act in his own defence.

SEDGE (*carex*), an extensive genus of grass-like plants, but easily distinguished from grasses by having the stem destitute of joints. The roots are perennial and fibrous, the leaves hard and rough on the edge. They are found in all soils, but the greater proportion grow in marshes; and there are altogether more than three hundred known species.

SEDI'TION, in politics, an opposition to the laws, or the administration of justice, and in disturbance of the public peace. In general, it signifies a local or limited oppo-

THE MAHOMMEDANS ARE DIVIDED INTO TWO GREAT SECTS, THE SUNNITES AND SHIITES, BESIDES NUMEROUS SMALLER SECTS, AS WAHABEES, &c.

WE SHOULD TRY SEEDS AS OUR ANCESTORS TRIED WITCHES; NOT BY FIRE, BUT BY WATER; THE GOOD WILL SINK; THE BAD, SWIM.

SEEDS BURIED DEEP IN THE GROUND OFTEN RETAIN THEIR POWER OF VEGETATION FOR MANY YEARS, AND GROW ON EXPOSURE TO THE AIR.

sition to *civil* authority; a commotion of less extent than an *insurrection*, and consequently less than *rebellion*.

SED'LITZ, or SEID'LITZ WATER, a mineral water obtained from a village of that name in Bohemia.—The waters are saline and purgative, limpid, sparkling, and of a bitter and salt taste; being composed principally of the sulphates and carbonates of magnesia and lime.

SEED, in botany, the germ of future plants, generally contained in the fruit which is its appendage and support. Every seed consists of an embryo plant. This embryo, which is the whole future plant in miniature, is called the germ or bud; and is rooted in the cotyledon or placenta, which makes its involucrum or cover. The cotyledon is always double; and in the middle, and common centre of the two, is a point or speck, which being acted on by the warmth of the sun and of the earth, begins to protrude its radicle, or root, downwards, and its bud upwards; and as the requisite heat continues, it draws nourishment by the root, and so continues to unfold itself and grow. In some cases, the seeds constitute the fruit or valuable part of plants, as in the case of wheat and other esculent grain; sometimes the seeds are inclosed in the fruit, as in apples and melons. Many kinds of seeds will continue good for several years, and retain their vegetative faculty; whereas others will not grow after they are one year old; this difference is in a great measure owing to their abounding more or less with oil; as also to the nature of the oil, and the texture of their outward covering. All seeds require some share of fresh air, to keep the germ in a healthy state; and where the air is absolutely excluded, the vegetative quality of the seeds will be soon lost. But seeds will be longest of all preserved in the earth, provided they are buried so deep as to be beyond the influence of the sun and showers; since they have been found to lie thus buried twenty or thirty years, and yet vegetate as well as new seeds. How the vegetative life is so long preserved, by burying them so deep in the ground, is very difficult to explain; but the fact is too well established to admit of a doubt on the subject. Books contain an abundance of instances of plants having suddenly sprung up from the soil obtained from deep excavations, where the seeds must be supposed to have been buried for ages. Professor Henslow says, that in the fens of Cambridgeshire, after the surface has been drained and the soil ploughed, large crops of white and black mustard invariably appear. Millar mentions a case of Plantago Psylium having sprung from the soil of an ancient ditch which was emptied at Chelsea, although the plant had never been seen in the memory of man. De Chandolle says, M. Girardin succeeded in raising kidney beans from seeds at least 100 years old, taken out of the herbarium of Tournefort; and raspberry plants have been raised from seeds found in an ancient coffin in a barrow in Dorsetshire, which seeds, from the coins and other relicts met with near them, may be estimated to have been 1600 to 1700 years old.

SEEL'ING, in falconry, the running of a thread through the eye-lids of a hawk when first taken, so that she may see very little, or not at all, to make her the better endure the hood.

SEG'MENT, in geometry, any part of a line in a triangle or other figure cut off by a perpendicular let fall upon it.——*Segment of a circle*, a part cut off by a chord, or that portion comprehended between an arc and a chord.

SEGREGA'TA POLYGA'MIA, in botany, the fifth order of the class *Syngenesia*; comprehending those flowers the several florets of which are included within a common calyx, and also furnished with their proper perianths.

SEIGN'IORAGE, a royal right or prerogative of the king or queen regnant of England, by which they claim an allowance of gold and silver brought in the mass to be exchanged for coin.——A lord of a manor is sometimes styled a *seignior*, and the lordship, a *seigniory*.

SE'IZIN, or SE'ISIN, in law, possession. Seizin in *fact*, or *deed*, is actual or corporal possession; seizin in *law*, is when something is done which the law accounts possession or seizin, as enrolment; or when lands descend to an heir, but he has not yet entered on them. In this case the law considers the heir as *seized* of the estate, and the person who wrongfully enters on the land is accounted a *disseizor*.

SELE'NIATE, in chemistry, a compound of selenic acid with a base.

SEL'ENITE, in mineralogy, foliated or crystalized sulphate of lime. There are two varieties, massive and acicular.

SELE'NIUM, an elementary mineral substance, extracted from the pyrites of a copper-mine at Fahlun, in Sweden. It is of a gray, dark brown colour, with a brilliant metallic lustre, and slightly translucent.

SELENIU'RET, a mineral of a shining lead gray colour, with a granular texture. It is composed chiefly of selenium, silver, and copper.

SELENOG'RAPHY, a delineation of the moon, with a description of its phenomena.

SELEU'CIDÆ, a term in chronology designating a particular æra. The æra of the Seleucidæ, or the Syro-Macedonian æra, is a computation of time, commencing from the establishment of the Seleucidæ, a race of Greek kings, who reigned as successors of Alexander the Great, in Syria, as the Ptolemies did in Egypt. This æra we find expressed in the book of the Maccabees, and on a great number of Greek medals, struck by the cities of Syria, &c. The Rabbins call it the æra of contracts: and the Arabs the æra of the two horns. According to the best accounts, the first year of this æra falls in the year 312 before Christ, being about eleven or twelve years after Alexander's death.

SELF-COMMAND', that steady equa-

nimity which enables a man in every situation to exert his reasoning faculty with coolness, and to do what the existing circumstances require. It depends much upon the natural temperament of the body, and much upon the moral cultivation of the mind; and he who from his early youth has been accustomed to make his passions submit to his reason, will, in any sudden emergency, be more capable of acting with a cool and steady resolution, than he who has tamely yielded to or allowed himself to be controlled by the influence of his passions.

SELF-KNOWL'EDGE, a difficult but most important acquisition. It is difficult, because every man is more or less blinded by some fallacy peculiar to himself, and it is disagreeable to investigate our errors, our faults, and our vices. But these difficulties are more than counterbalanced by the advantages of self knowledge. By knowing the extent of our abilities, we shall be restrained from rashly engaging in enterprizes beyond our ability; by investigating our opinions, we may discover those which are based upon false principles; and by examining our virtues and vices, we shall learn what principles ought to be strengthened, and what habits or propensities ought to be abandoned.

SELF-LOVE, an instinctive principle in the human mind which impels every rational creature to preserve his life, and promote his own happiness. It is very generally confounded with selfishness, but their springs of action and their results are very different; for selfishness is the parent and nurse of every vice, while self-love only prompts him who is actuated by it to procure to himself the greatest possible sum of happiness during his whole existence.

SEL'LING OUT, among stockbrokers, a transfer of one's share of stock from one person to another, in distinction from buying in, which is the purchase of the stock held by another.

SELTZER WATER, in medicine, a saline water, slightly alkaline, and highly acidulated with carbonic acid. It is used with great success in many diseases.

SEMEIOT'ICS, or SEMEIOL'OGY, the doctrine of signs; terms used in medical science to denote that branch which teaches how to judge of all the symptoms in a human body, either in a state of health or disease.

SEM'I, a prefix to many words, signifying *half*, as *semicircle*, half a circle, &c.

SEMI-AMPLEX'ICANT, in botany, embracing the stem half way, as a leaf.

SEM'IBREVE, in music, the measure note by which all others are regulated. It contains the time of two minims, which are divided either into four crotchets, eight quavers, sixteen semiquavers, or thirty-two demi-semiquavers.

SEMICOLON, in grammar and punctuation, the point [;] the mark of a pause to be observed in reading, of less duration than the colon, double the duration of the comma, or half the duration of the period. It is used to distinguish the conjunct members of a sentence.

SEMI-COLUM'NAR, flat on one side, and round on the other: a term of botany, applied to a stem, leaf, or petiole.

SEMI-DIAM'ETER, in geometry, a right line drawn from the centre of a circle or sphere to its circumference or periphery; a radius.

SEMI-DIAPA'SON, in music, a defective octave, or an octave diminished by a minor semitone.

SEMI-DIATES'SARON, in music, an imperfect or defective fourth.

SEM'I-DITONE, in music, a lesser third, having its terms as 6 to 5.

SEM'I-FLORET, in botany, a half floret, which is tubulous at the beginning, like a floret, and afterwards expanded in the form of a tongue.

SEMI-FLOSCULO'SÆ, in botany, the name of a subdivision in the order of compound flowers, both in the natural and artificial system of Linnæus, comprehending such as are made up wholly of fertile ligulate corollets.

SEMI-FLOS'CULOUS, in botany, composed of semi-florets, or ligulate; as a *semi-flosculous* flower.

SEM'I-METAL, a metal that is not malleable, as bismuth, arsenic, nickel, cobalt, zinc, antimony, manganese, tungsten, molybdenum, and uranite. The name, however, is usually given to the regulus of these substances.

SEM'INARY, in gardening, a seed-plat, or place for raising plants, and keeping them till they are fit to be removed into the garden or nursery.——Any place of education, in which young persons are instructed in the several branches of learning.

SEMINA'TION, the natural manner of shedding and dispersing the seeds of plants, which is variously effected. Some are heavy enough to fall directly to the ground; others are furnished with a pappus, or down, by means of which they are dispersed by the wind; while others are contained in elastic capsules, which, bursting open with considerable force, throw out the seeds.

SEMI-OR'DINATE, in conic sections, a line drawn at right angles to and bisected by the axis, and reaching from one side of the section to the other; the half of which is properly the semi-ordinate, but is now called the ordinate.

SEMI-PELA'GIANS, a sect of Christians, who hold that God has not by predestination dispensed his grace to one more than to another; that Christ died for all men; that the grace purchased by Christ and necessary to salvation, is offered to all men; that man, before he receives grace, is capable of faith and holy desires; and that man being born free, is capable of accepting grace, or of resisting its influences.

SEMI-PRIMI'GENOUS, in geology, of a middle nature between substances of primary and secondary formation.

SEMI-PROTOLITE, in geology, a species of fossil of a middle nature between

substances which are of primary and such as are of secondary formation.

SEMI-QUAR'TILE, or SEMI-QUAD'RATE, in astronomy, an aspect of the planets, when distant from each other the half of a quadrant, or forty-five degrees.

SEM'IQUAVER, in music, a note of half the duration of the quaver, being the sixteenth of the semibreve.

SEMI-SEX'TILE, in astronomy, an aspect of the planets, when they are distant from each other the twelfth part of a circle, or thirty degrees.

SEM'ITONE, in music, half a tone, being the smallest interval admitted in modern music. The *semitonic scale* consists of twelve degrees, or thirteen notes in the octave.

SEM'I-VOWEL, in grammar, a half vowel, or an articulation which is accompanied with an imperfect sound; as, *el, em, en*, which, though uttered with close organs, do not wholly interrupt the sounds.

SEMPERVI'VUM, in the Linnæan system, a genus of plants, class 11 *Dodecandria*, order 6 *Polygynia*. The species consist of hardy perennials.

SEN'ATE, an assembly or council of senators: that is, a body of the principal inhabitants of a state, invested with a share in the government. The senate of ancient Rome was, of all others, the most celebrated: it appointed judges, either from among the senators or knights, to determine processes; it also appointed governors of provinces, and disposed of the revenues of the commonwealth, &c. Yet the whole sovereign power did not reside in the senate, since it could not elect magistrates, make laws, or decide on war and peace; in all which cases the senate was obliged to consult the people. One of the qualifications of a senator was the possession of property to the amount of 80,000 sesterces, about 700*l*.——In the United States of America, *senate* denotes the higher branch or house of legislature, viz. the upper house of congress; and in most of the states, the higher and least numerous branch of the legislature is called the senate.——*Senate-house*, a building in which the senate meets, or a place of public council.——*Senate*, in the university of Cambridge, is equivalent to the convocation at Oxford, and consists of all masters of arts, and higher graduates, being masters of arts, who have each a voice in every public measure, in granting degrees, in electing members of parliament, a chancellor, &c.

SENA'TUS AUCTORI'TAS, a vote of the Roman senate, drawn up in the same form as a decree, but without its force, as having been prevented from passing into a decree by some of the tribunes of the people.

SENA'TUS CONSUL'TUM, a decree of the Roman senate, pronounced on some question or point of law; which, when passed, made a part of the law.

SEN'ECA ROOT, the root of the *Polygala senega*, a woody, branching root, about half an inch in diameter. Its medicinal virtues have been greatly exaggerated as a cure for the bite of the rattlesnake, and also as a remedy in pulmonary complaints. The plant grows to the height of about a foot, producing several herbaceous stems, and its blossoms resemble those of the pea.

SENE'CIO, in the Linnæan system, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*.

SEN'ESCHAL, an officer in the houses of princes and dignitaries, who has the superintendence of feasts and public ceremonies. In some instances, the seneschal is an officer who has the dispensing of justice, as the high seneschal of England, &c.

SEN'NA, the leaves of the *Cassia senna*, which are imported here from Alexandria for medicinal use. They have rather a disagreeable smell, and a sub-acrid, bitterish, nauseous taste. They are in common use as a purgative; and are given as an infusion, tincture, or made into an electuary.

SENOC'ULAR, in entomology, an epithet for such insects as have six eyes.

SENSE, the faculty of the soul by which it perceives external objects by means of impressions made on certain organs of the body. The external organs of *sense* are usually classed under five heads, viz. those of sight, hearing, feeling, smell, and taste. The nerves and the brain are the organs of *sensation*. If the external organ be destroyed, no sensation can be produced: where there are no nerves there is no sensation: where the nervous branches are most numerous there is most sensation; if the nerve be destroyed, sensations cannot be produced from those parts to which the nerve belongs, which are further from the brain than the injured parts. All the nerves terminate in the brain. If the brain is compressed, sensation is suspended: if the brain is considerably injured, sensation ceases. Sensations are the rudiments and elements of our ideas, that is, of all our thoughts and feelings. In the earliest exercise of the sensitive power, sensations are simple, uncompounded with the relics of former corresponding sensations; but the sensations soon become perceptions; that is, they instantaneously recal the relics of other corresponding sensations. The accuracy and extent of the perception depends on the vividness and efficaciousness of the compound sensations, and the number of them received from the same or similar objects in different situations, and through the medium of different senses. The object therefore of early education should be to invigorate the organs of sense.——*Common sense* is that power of the mind which, by a kind of instinct, or a short process of reasoning, perceives truth, the relation of things, cause and effect, &c., and hence enables the possessor to discern what is right and expedient, and adopt the best means to accomplish his purpose.——*Moral sense* implies, a determination of the mind to be pleased with those affections, actions or characters of rational agents, which are considered good and conducive to virtue.

SENSIBIL'ITY, acuteness of perception,

or that quality of the mind which renders it susceptible of impressions; delicacy of feeling; as *sensibility* to pleasure or pain, shame or praise.——In physiology, the capability which a nerve possesses of conveying the sensation produced by the contact of another body with it.

SEN'SITIVE PLANT, a native of tropical America, but often seen in our greenhouses. It is celebrated for its apparent sensibility, shrinking and folding up its leaves on the slightest touch. [See MIMOSA.]

SENSO'RIUM, or SEN'SORY, the brain and nerves, the seat of sense. According to some writers, it not only denotes the different organs of sense, but also that living principle or spirit of animation which resides throughout the body, without being cognizable to our senses, except by its effects.

SEN'TENCE, in law, a judicial decision publicly and officially declared in a criminal prosecution. In *civil* cases, the decision of a court is called a *judgment*.——In grammar, a number of words containing complete sense, and followed by a full pause; a period. A *simple* sentence consists of one subject and one finite verb; as, "the man walks." A *compound* sentence contains two or more subjects and finite verbs; as, "we live, and move, and have our being."

SENTICO'SÆ, the 35th Linnæan natural order of plants, containing the rose, briar, bramble, &c.

SEN'TIMENT, in its primary sense, signifies a thought prompted by passion or feeling. Also, the decision of the mind, formed by deliberation or reasoning.——*Sentiments*, in poetry, and especially dramatic, are the thoughts which the several persons express, whether they relate to matters of opinion, passion, &c.

SEN'TINEL, or SEN'TRY, in military affairs, a private soldier placed in some post, either to watch any approach of the enemy, to prevent surprises, and to stop such as would pass without order, or have no business where he is posted.

SE'PIA, in ichthyology, the *cuttle-fish*, a genus of the *Vermes mollusca* class and order, of which there are eight species, inhabitants of various seas. The *Sepia officinalis* inhabits the ocean, and is the prey of the whale tribe and plaice; its arms are also frequently eaten off by the conger eel, and are re-produced. [See CUTTLE-FISH].——*Sepia*, a pigment prepared from the black juice secreted in certain glands of the above-described fish. All the varieties of mollusca secrete the same liquor, but that of the *Sepia officinalis* is most preferred. Caustic alkalies dissolve the sepia, and turn it brown. After certain preparations it is fit for the painter, and is a colour of much use.

SEPIA'RIÆ, the 44th natural order of plants in the Linnæan system; including such as grow wild in hedges or are used for hedges, as the briar, privet, &c.

SE'POYS, the name given to the Hindoo or native troops in the service of the East India company, of whom there are nearly 200,000, chiefly infantry, though there are several regiments of cavalry and some companies of artillery. They are all disciplined after the European manner, and are hardy, temperate, and subordinate. Their dress consists of a red jacket, with a white cotton vest, trowsers reaching only halfway down the thighs, and a light turban.

SEPS, in natural history, a species of venomous eft or lizard.

SEPT, in Irish history, a clan, race, or family, proceeding from a common progenitor.

SEPTA'RIA, in mineralogy, a name given to nodules or spheroidal masses of calcareous marl, whose interior presents numerous fissures or seams of some crystalized substance, which divide the mass.

SEPTEM'BER, the ninth month of Numa's year, but the seventh of the year of Romulus, whence it derives its name, viz. *septimus mensis*.

SEPTEMBRISA'DE, in politics, a term in use during the revolutionary commotions in France for any horrid massacre like that which disgraced the 2nd and 3rd of September, 1792.

SEPTEN'NIAL, happening or returning every seven years, as *septennial* parliaments, *i.e.* new parliaments chosen every seven years, as they are at present appointed.

SEPTEN'TRION, or SEPTEN'TRIONAL, pertaining to the north or northern regions of the globe.

SEP'TIC, in chemistry, an epithet for any substance that promotes the putrefaction of bodies; as *antiseptic* is for whatever tends to preserve them from putrefaction.

SEPTUAGES'IMA, in the calendar, the third Sunday before Lent, or before Quadragesima Sunday: supposed to take its name from being about seventy days before Easter.

SEP'TUAGINT, a Greek version of the books of the Old Testament, so called because the translation is supposed to have been made by seventy-two Jews, who, for the sake of round numbers, are usually called the *seventy interpreters*. This translation is said to have been made at the request of Ptolemy Philadelphus, king of Egypt, about 280 years before the birth of Christ. It was in use in the time of our Saviour, and is that out of which all the citations in the New Testament from the Old are taken. It was also the ordinary and canonical translation made use of by the Christian church in the earliest ages; and it still subsists in the churches both of the east and west. It is however observable, that the chronology of the Septuagint makes fifteen hundred years more from the creation to Abraham, than the present Hebrew copies of the Bible.

SEPTUM AU'RIS, in anatomy, the drum of the ear.——*Septum cerebelli*, a process of the *dura mater*, dividing the cerebellum into two equal parts.——*Septum cordis*, the partition between the two ventricles of the

TOUCHING OR AGITATING THE SENSITIVE PLANT PRODUCES A GREATER EFFECT THAN AN INCISION OR CUTTING OFF A PART.

heart.——*Septum narium*, the partition between the nostrils.

SEP'ULCHRE, a place destined for the interment of the dead. This term is chiefly used in speaking of the burying places of the ancients, those of the moderns being usually called *tombs*. Sepulchres were held sacred and inviolable, and the care taken of them has always been held a religious duty. Those who have searched or violated them, have been thought odious by all nations, and were always severely punished. The Egyptians called sepulchres *eternal houses*, in contradistinction to their ordinary houses or palaces, which they called inns, on account of their short stay or pilgrimage on earth. The sepulchres of the Hebrews in general were hollow places dug out of rocks. Thus Abraham is said to bury Sarah his wife in the cave of Macpelah (Gen. xxiii. 19). In such sepulchres, also, the bodies of Lazarus and Jesus Christ were buried (John xi. 38), Matthew xxvii. 60. And the same custom prevails in the East to this day, according to the account of modern travellers.——*Knights of the holy Sepulchre*, a military order, established in Palestine about the year 1114.

SEPULTU'RA, in archæology, an offering made to the priest for the burial of a dead body.

SE'QUENCE, in music, a regular succession of similar sounds.——In gaming, a set of cards immediately following each other, in the same suit, as a king, queen, knave, &c.; thus we say, a sequence of three, four, or five cards.

SEQUESTRA'TION, in law, the act of taking a thing, in controversy, from the possession of both parties till the right be determined by course of law.——In the civil law, the act of the ordinary, disposing of the goods and chattels of a person deceased, whose estate no one will meddle with.

SE'QUIN, or ZE'CHIN, a gold coin of Venice and Turkey, of different values in different places, but generally about 9s.

SERAG'LIO (pron. *seral'yo*), a Persian word, signifying the palace of a prince or lord; but the term is used, by way of eminence, for the palace of the Grand Seignior at Constantinople, and all the officers and dependents of his court; and in it is transacted all the business of government. In this building are also kept the females of the harem. [See HAREM.]

SERA'I, a large building for the accommodation of travellers, common in the East. In Turkey they are called *khans;* in Persia, *caravanserais*, which we write *caravansaries;* but in Tartary and India, simply *serais.*

SER'APH, a spirit of the highest rank in the hierarchy of angels; thus called from their being supposed to be most inflamed with divine love, or holy zeal, owing to their more immediate attendance at the throne of God. The Hebrew plural is *seraphim:* the English plural is regularly formed *(seraphs).*

SERAS'KIER, a Turkish general or commander of land forces.

SERASS', in ornithology, a fowl of the crane kind, a native of the East Indies.

SERENA'DE, music performed in the street during the silence of night. It consists generally of instrumental music, but that of the voice is sometimes added. Hence, an entertainment of music given in the night by a lover to his mistress under her window is styled a *serenade.*

SERF, a servant or, as is the case in some countries, a peasant slave, attached to the soil and transferred with it.

SERGE, a kind of woollen quilted stuff.

SER'GEANT, in military affairs, a non-commissioned officer in a company of infantry or troop of cavalry, whose duty is to order and form the ranks, and see discipline preserved.——*Sergeant-at-law*, a barrister who usually pleads in the court of common-pleas, but who is allowed to plead also in other courts. Every judge must first be a sergeant-at-law.——*Sergeant-at-arms*, or *at mace*, an officer appointed to attend the person of the sovereign, arrest persons of quality that offend, &c. A similar sergeant attends the lord chancellor; a third, the speaker of the house of commons; and a fourth, the lord-mayor of London, on solemn occasions.——*Common-sergeant*, an officer of the city of London, who attends the lord-mayor and court of aldermen on court-days, and is in council with them on all occasions. He is, more particularly, to take care of the orphans' estates.——*Sergeantry*, in the old English law, is of two kinds. *Grand sergeantry* is a kind of knight service, by which the tenant was bound to do some special honorary service to the king in person, as to carry his banner or sword, or be his champion at his coronation, &c. *Petit sergeantry* was a tenure by which the tenant was bound to render to the king annually some small implement of war, as a bow, a sword, a lance, &c.

SE'RIES, a continued succession of things in the same order. In natural history, a *series* is used for an order or subdivision of some class of natural bodies; comprehending all such as are distinguished from others of that class by certain characters, which they possess in common, and which the rest of the bodies of that class have not.——*Series*, in mathematics, is a number of terms, whether of numbers or quantities, increasing or decreasing in a given proportion.——*Infinite series*, is a series consisting of an infinite number of terms, at the end of which it is impossible ever to arrive; so that let the series be carried on to any assignable length, or number of terms, it can be carried still farther.

SERIO'LA, in botany, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamia æqualis.* The species are perennials.

SERIPH'IUM, in botany, a genus of plants, class 19 *Syngenesia*, order 5 *Polygamia segregata.* The species are shrubs.

SERPENTA'RIA, in botany, the plant called also snake-root.

SERPENTA'RIUS, in astronomy, a constellation in the northern hemisphere, containing seventy-four stars.

SER'PENTES, or SER'PENTS, the second order of *Amphibia*, including seven genera, the boa, coluber, anguis, achrochordus, amphisbæna, cæcilia, and crotalus. They are distinguished from lizards by having no feet, and from eels by having no fins. They have tapering bodies, without a distinct neck; the jaws are not articulated, but dilatable; and they move along the earth by a winding motion, and with the head elevated. Their poison, when they are poisonous, is contained in fangs placed in the upper jaw, and capable of being protruded at pleasure. Some serpents are viviparous, as the rattlesnake; while those which are innoxious are oviparous, depositing their eggs in a kind of chain, in any close warm situation, where they are afterwards hatched.—The following observations on the respiration and deglutition of the boa-constrictors exhibiting in Paris, were lately presented to the Institute: These enormous serpents swallow several large live fowls, one after the other, at a meal. During the repast, which lasts half an hour or more, the throat continues greatly distended, and all communication between the nostrils (through which the reptile usually breathes) and the lungs is completely shut out; but by an admirable provision of nature, the creature protrudes the orifice of its windpipe from between the branches of the lower jaw, quite out of its mouth, to the extent of an inch, and at least three inches beyond its usual situation. The throat being distended to its utmost stretch by the fowl or rabbit in the œsophagus, the glottis is seen protruding between the branches of the lower jaw and the skin of the throat; and the protrusion is greater in proportion as the object in the act of being swallowed is of a large size. Every half-minute, more or less, the orifice of the windpipe is open to nearly half an inch in diameter, and a gush of air like that from a small pair of bellows, issues out; when, fresh air being immediately afterwards taken in, the glottis is again closed by the sphincter muscles till the next expiration, and so on alternately.——We have elsewhere spoken of the *fascinating* power which naturalists have attributed to certain species of the serpent tribe; but in "Jameson's Journal" this opinion of the *fascination* of serpents is denied by Dr. Hancock, who says, "it is not a faculty of charming or of fascinating, in the usual acceptation of the term, which enables certain serpents to take birds; but, on the contrary, the hideous forms and gestures, which strike the timid animals with impressions of horror, stupefying them with terror, and rendering them unfit for any exertion: especially as those serpents to which has been ascribed the power of fascinating, are among the most terrific of the tribe. From the earliest ages we read that serpents have been the most formidable enemies of mankind; and though the lion, the tiger, and the wolf, have been driven from man's immediate haunts, this class of reptiles still defies his power. Along the swampy banks of the Oronoco, where the sun is hot, the forests thick, and the men but few, the serpents cling among the branches of the trees in infinite numbers, and carry on an unceasing war against all animals in their vicinity. Many a traveller has seen large snakes twining round the trunk of a tall tree, encompassing it like a wreath, and thus rising and descending it at pleasure. We cannot, therefore, reject as wholly fabulous, the accounts given by the ancients of the terrible devastations committed by single serpents. It is probable, in early times, when mankind were but thinly scattered over the earth, that serpents, continuing undisturbed possessors of the forest, grew to an amazing magnitude; and every other tribe of animals fell before them. It then might have happened that serpents reigned the tyrants of a district for centuries together. To animals of this kind, grown by time and rapacity to 100 or 150 feet in length, the most powerful beast of the forest was but a feeble opponent. That horrible fætor, which even the commonest and most harmless snakes are still found to diffuse, might, in these larger ones, become too powerful for any living being to withstand; and, while they preyed without distinction, they might thus also have poisoned the atmosphere around them. But, as we descend into more enlightened antiquity, we find these animals less formidable, as being attacked in a more successful manner. While Regulus led his army along the banks of the river Bagrada, in Africa, an enormous serpent disputed his passage with it. Pliny says that it was 120 feet long, and that it had destroyed many of the army. At last, however, the battering-engines were brought out against it; and these assailing it at a distance, it was soon destroyed. Its spoils were carried to Rome, and the general was decreed an ovation for its success. There are, perhaps, few facts in history better ascertained than this. An ovation was a remarkable honour, and was given only for some signal exploit that did not demand a triumph. The skin was kept for several days after in the capitol; and Pliny says he saw it there.

SER'PENTINE, or SER'PENTINE-STONE, in mineralogy, a primitive rock, composed of felspar and hornblende. It is usually of an obscure green colour, with shades and spots.——*Serpentine*, in chemistry, a long winding worm, or pipe of lead or pewter, which is placed in a tub of water in the distillation of spirits.——*Serpentine verses*, in poetry, verses which begin and end with the same words.

SERPIC'ULA, in botany, a genus of plants, class 31 *Monoecia*, order 4 *Tetrandria*.

SERPI'GO, in medicine, a species of herpes; called in popular language, a ringworm.

SERPU'LA, in conchology, a genus of testaceous animals, of the class *Vermes*, order *Testacea*, having a tubular univalve shell; the inhabitant of which is a terebella.

SER'PULITE, in the natural history of

fossils, petrified shells or fossil remains of the genus *Serpula*.

SER'RATE, or SER'RATED, in general, something notched or indented on the edge, like a saw; a term much used in botany in describing the leaves of plants, which are said to be *duplicately serrated*, or *doubly serrate*, when the edges of the large serratures are again serrated with lesser indentings of the same kind.——A *serrate-ciliate* leaf, is one having fine hairs, like the eye-lashes, on the serratures. A *serrulate leaf*, is one finely serrate, with very small notches or teeth.

SERRA'TUS, in anatomy, an epithet given to several muscles, from their resemblance to a saw.——Also, a term in botany; *folium serratum*, a leaf having sharp imbricated notches on the edge.

SERRA'TULA, in botany, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamia æqualis*. The species are perennials, and consist of the different kinds of saw-wort.

SER'VAL, in zoology, an animal of the feline genus, resembling the lynx in form and size, and the panther in its spots. It is a native of Malabar.

SER'VICE, in a general sense, labour, whether of body or mind, or of both united, performed in pursuance of duty, or at the command of a superior. The service of persons who spontaneously perform something for another's benefit, is termed *voluntary*, and that of those who work by compulsion, *involuntary service*.——Public worship is termed *divine service*.——The duty which a tenant owes to his lord for his fee, is called *personal service*.——The word *service* is also applied to the duty of naval or military men when serving their country; as *home service, foreign service, limited service*, &c.——Various legal processes are also distinguished by the term *service*, as the service of a *writ*, an *attachment*, an *execution*, &c.

SER'VICE-TREE, in botany, the *Sorbus* and *Cratægus* of Linnæus. The fruit of this tree is a powerful astringent, and therefore often used in cases of dysentery.

SER'VITOR, a poor scholar at Oxford, answering to a *sizer* at Cambridge, who attends on other students for his maintenance and learning.

SE'RUM, in the animal economy, a thin transparent liquor which forms a part of the blood. The serum is in reality the same with the lymph, which is carried by the arteries through the several parts of the body; whence it returns partly in the veins, and partly in the lymphatic vessels. Also *whey*, or the remainder of the milk after its richer parts have been taken away.

SESQUIALTERAL, in geometry, a term designating a ratio where one quantity or number contains another once and half as much more.——In botany, a *sesquialteral floret*, is when a large fertile floret is accompanied with a small abortive one.

SESAMOI'DEA OS'SA, in anatomy, little bones found at the articulations of the toes, so called from their supposed resemblance to the seeds of the sesamum.

SE'SAMUM, a genus of plants in the Linnæan system, class 14 *Didynamia*, order 2 *Angiospermia*. The species are annuals, natives of the East Indies and Africa.

SES'QUITONE, in music, a minor third, or interval of three semitones.

SES'SILE, in botany, an epithet for a leaf which issues directly from the stem or branch, without a petiole or foot-stalk.

SES'SION, in law, a sitting of justices in court upon their commission, as the session oyer and terminer, &c.——The session of a judicial court is called a *term*: thus a court may have two sessions or four sessions annually. The term *sessions*, or *quarter sessions*, is applied to those quarterly meetings of justices of the peace, when minor offences are tried, or business performed which requires the sanction of two or more justices.——*Session of parliament*, the season and space between its meeting and its prorogation.

SES'TERCE, in antiquity, a Roman coin, the fourth part of a denarius in value, or about twopence. The *sestertium*, or *sestertium pondus*, was two pounds and a half, or 250 denarii; about 7*l.* sterling. One qualification of a Roman knight was the possession of estate of the value of four hundred thousand sesterces; that of a senator was double this sum.

SETA'CEOUS, in botany, bristle-shaped; being in size and length like a bristle; as, a *setaceous* leaflet.

SET'-OFF, is a term used in law, when the defendant acknowledges the plaintiff's demand, but makes a demand of his own, to *set-off* or counterbalance the debt either wholly or in part.

SE'TON, in surgery, a sort of issue, generally in the neck, formed by means of horse-hair or fine threads drawn through the skin by a large needle, by which a small opening is made and continued for the discharge of humours.

SETO'SUS, in botany, an epithet for a leaf or receptacle, the surface of which is set with bristles.

SETTEE', in the marine, a vessel of from 60 to 100 tons burden, with two masts, equipped with triangular or lateen sails. They are used in the Mediterranean for transporting cannon, stores, &c.——A kind of couch or sofa.

SEXAGES'IMA, the second Sunday before Lent, or the next to Shrove Sunday: so called as being about the 60th day before Easter.

SEXAGES'IMAL ARITH'METIC, a mode of computing by sixtieths; such as the division of a degree into sixty minutes, and a minute into sixty seconds.

SEXDE'CIMAL, in crystalography, an epithet used when a prism or the middle part of a crystal has six faces and two summits, and taken together, ten faces, or the reverse.

SEXDUODE'CIMAL, in crystalography, an epithet for a crystal when the prism has six faces and two summits, having together twelve faces.

SEXHIN'DENI, or SEX'HINDMEN, in

MANY ANIMALCULA, AFTER HAVING BEEN APPARENTLY DEAD FOR YEARS, REVIVE AGAIN ON BEING PUT IN A DROP OF WATER.

ALL THE EXPERIMENTS ON BEES PROVE, THAT LOVE FOR THEIR QUEEN AND HER PROGENY IS THE SOLE STIMULUS TO THEIR INDUSTRY.

Anglo-Saxon history, the middle thanes, who were rated at 600 shillings.

SEX'TAIN, in poetry, a stanza containing six verses.

SEX'TANT, in mathematics, the sixth part of a circle, or an arc comprehending sixty degrees. Also an astronomical instrument like a quadrant, except that its limb only comprehends sixty degrees.

SEX'TARY-LANDS, in law, lands given to a church or religious house for the maintenance of the sexton or sacristan.

SEX'TILE, the position or aspect of two planets when distant from each other sixty degrees, or two signs.

SEXTILIS, the sixth month of Romulus's year, but the eighth of the year of Numa. It was under the protection of *Ceres*, and was afterwards called *August*, in honour of Augustus.

SEX'TON, an under officer of the church, whose business it is to take care of the vessels, vestments, &c. belonging to the church, and to attend the officiating clergyman, and perform other duties pertaining to the church. He was anciently called the *sacristan*.

SEX'UAL SYSTEM, in botany, the Linnæan system of classifying plants, according to the distinction of sex, the male producing a pollen or dust, which is provided for the fecundation of the pistil or female organ, and is necessary to render it prolific. [See BOTANY.]

SFORZA'TO, in music, an Italian term signifying that the note over which it is placed must be struck with force.

SHAB'RACK, a military term, of Hungarian origin, used for the cloth furniture of a cavalry officer's troop-horse or charger.

SHAD'DOCK, a large species of orange, with a white, thick, spungy rind, and a red or white pulp, of a sweet taste mingled with acidity. Also, the *citrus decumana* of Linnæus.

SHAD'OW, in optics, a privation or diminution of light, by the interposition of an opaque body. *Shadow* differs from *shade*, as the latter implies no particular form, or definite limit; whereas a shadow represents in form the object which intercepts the light; as, the *shadow* of a man, of a tower, &c.——*Shading*, or *shadowing*, in painting, the art of duly representing light and shade in a picture.——*To shadow*, to represent faintly, imperfectly, or typically.

SHAFT, in architecture, the body of a column, between the base and the capital. ——In mining, a pit or long narrow opening or entrance into a mine.

SHAGREE'N, in commerce, a kind of grained leather, supposed formerly to be prepared from the skin of a species of *squalus*, or hound-fish, called the *shagree*. It is, however, now known, that the material is the strong skin, cut along the chine, from the neck to the tail, of the ass or horse. The skin is first soaked in water for some days till the hair is loose enough to be scraped off; after which it is cut and scraped till it becomes scarcely thicker than a bladder. It is then, while wet and soft, fastened to a frame, the flesh side uppermost, and the upper or grain side is strewed over with the hard round seeds of a species of chenopodium; a felt is then laid over it, and the seeds are trodden deeply into the soft yielding skin. The frames are then placed in the shade till the skin becomes dry and the seeds will shake out of their holes. Next, the skin is rasped till the sides of the holes are worn down almost to a level with their bottoms: it is then soaked, first in water, and afterwards in an alkaline ley; and, as it becomes soft, those parts of the skin which were merely depressed by the seeds being forced down upon them, rise above the parts which had been rasped, presenting a granular or pustular surface. The skin is then stained superficially of a green colour by copper filings and sal ammoniac, and is afterwards allowed to dry; lastly, the grains or protuberances are rubbed down to a level with the rest of the surface, which thus presents the appearance of white dots on a green ground. Astracan is the seat of this manufacture, and vast quantities were imported into this country when it was the fashion to use it for watch and spectacle-cases, and a variety of other purposes.

SHAKE, in music, an embellishment, consisting of an alternate reiteration of two notes, comprehending an interval not greater than one whole tone, nor less than a semitone.

SHALE, in natural history, a species of shist, or slate clay, generally of a bluish or yellowish gray colour, but sometimes blackish or inclining to green. Its fracture is slaty, and in water it moulders into powder. It is often found in strata in coal mines, and commonly bears vegetable impressions. ——*Bituminous shale* is a sub-variety of argillaceous slate, impregnated with bitumen, and burns with flame.

SHAM'AN, in Russia, a wizard or conjuror, who by enchantment pretends to cure diseases, ward off misfortunes, and foretel events.

SHAM'MY, a kind of leather prepared from the skin of the chamois, or wild goat, or rather a species of antelope, inhabiting the mountains of Savoy, Piedmont, and the Pyrenees. It is dressed in oil or tanned, and much esteemed for its softness, pliancy, and the quality of bearing soap without damage. A great part of the leather which bears this name is counterfeit, being made of the skin of the common goat, the kid, or even of sheep.

SHAM'ROCK, the Irish name for three-leaved grass, or trefoil. According to legendary tradition, when St. Patrick landed near Wicklow, to convert the Irish, in 433, the pagan inhabitants were about to stone him; but having obtained a hearing, he endeavoured to explain to them the Trinity in Unity; but they could not understand him, till, plucking a trefoil from the ground, he said, "Is it not as possible for the Father, Son, and Holy Ghost, as for these leaves, to grow upon a single stalk?" Upon which (says the legend) the Irish were immediately convinced.—An ingenious naturalist

THE NAME OF SHAMROCK IS SOMETIMES GIVEN TO THE HOP-TREFOIL, A PLANT VERY MUCH RESEMBLING THE YELLOW CLOVER.

has lately attempted to prove that the original plant was not the white clover, which is now employed as the emblem of Ireland. Old authors prove (as he observes) that the *shamrock* was eaten by the Irish; and one who went over to Ireland in the sixteenth century, says it was eaten, and was a *sour* plant. The name, also, of shamrock is common to several trefoils, both in the Irish and Gaelic languages. Now, clover could not have been eaten, and is not sour. *Wood-sorrel* alone is sour, is an early spring plant, is abundant in Ireland, and is a trefoil. The old herbalists call it *shamrog*, and it is sour; while its beauty might entitle it to the distinction of being the national emblem.

SHARK, in ichthyology, a voracious fish of the genus *Squalus*, common in most seas. Some species are said to grow to the length of thirty feet, and are said to weigh 3000 or 4000 lb. They devour almost every animal substance, but some few subsist on marine vegetables.

SHAR'OCK, in commerce, a silver coin in India, worth about a shilling.

SHARP'ING, in archæology, a customary present of corn made about Christmas, by farmers in some parts of England to the smiths, for sharpening their iron implements of husbandry.

SHAS'TER, among the Hindoos, a sacred book containing the dogmas of the religion of the Bramins and the ceremonies of their worship. It consists of three parts; the first containing the moral law of the Hindoos; the second the rites and ceremonies of their religion; the third the distribution of the people into tribes or classes, with the duties pertaining to each.

SHAWL, a garment used by females as a loose covering for the neck and shoulders. Shawls are made of various materials, as fine wool, silk, or wool and silk mixed, and of various sizes. They were originally manufactured in the heart of India, from the fine silky wool of the Thibet sheep; but the best shawls now come from Cashmere.—— At Kilghiet, in the district of Soudah, twenty days' journey from Cashmere, is held the great mart for the worsted employed in the manufacture of those soft stuffs used as shawls, and almost as much in demand by the elegant females of Europe, as the more voluptuous inmates of the East. There are two qualities of worsted: that which is most readily dyed is white; the other species is of a light ash colour, which cannot, without some difficulty, be rendered sufficiently white, and is more frequently used of the natural colour. One goat rarely furnishes more than two or three pounds of worsted per year. After the shearing, the two qualities are carefully separated; after which, they undergo repeated washings in rice water. Great importance is attached to the operation of washing; and the Cashmerians attribute much of the delicacy of their unrivalled productions to the fine qualities of the waters of their valley. The form, size, and border of the shawls, vary according to the different markets for which the manufacturer designs them.

SHAWM, in antiquity, an instrument used in the sacred music of the Hebrews.

SHEATH'ING, in naval architecture, sheets of copper nailed all over the outside of a ship's bottom, to protect the planks from the pernicious effects of worms.

SHEAVE, in mechanics, a solid cylindrical wheel, fixed in a channel, and movable about an axis; the wheel in which the rope works in the *block*, made either of wood or metal.——*Sheave-hole*, a channel cut in a mast, yard, or timber, in which to fix a sheave. [See BLOCK.]

SHEEP, in zoology, a well-known animal of the genus *Ovis*, but of various breeds; as, the South-down, the Norfolk, Leicester, Cheviot, Merino, Welsh, &c. &c. It is an innocent, docile, and harmless animal; and is properly regarded as one of the most useful species that the Creator has bestowed on man; its flesh being a highly valuable article of food, while its wool constitutes a principal material of our clothing, and forms a fundamental part of the wealth of Britain. "The dressed skin," says Mr. Pennant, in his British zoology, "forms different parts of our apparel; and is used for covers of books. The entrails, properly prepared and twisted, serve for strings for various musical instruments. The bones calcined (like other bones in general), form materials for tests for the refiner. The milk is thicker than that of cows, and consequently yields a greater quantity of butter and cheese; and in some places is so rich, that it will not produce the cheese without a mixture of water to make it part from the whey. The dung is a remarkably rich manure; insomuch that the folding of sheep is become too useful a branch of husbandry for the farmer to neglect. To conclude; whether we consider the advantages that result from this animal to individuals in particular, or to these kingdoms in general, we may, with Columella, consider this, in one sense, as the first of the domestic quadrupeds."

SHEIK, an elder or chief of the Arabic tribes or hordes. They are very proud of their long line of noble ancestors; and some of them also take the title of *emir*. The Mohammedans also call the heads of their monasteries *sheiks*, and the Turkish mufti is sometimes called *sheik ulislam*, or chief of the true believers.

SHE'KEL, a Jewish silver coin, worth about half-a-crown. There was also the golden shekel, worth 1*l.* 16*s.* 6*d.* sterling.

SHEL'DRAKE, in ornithology, a bird of the duck tribe, the *Anas tadorna* of Linnæus.

SHELL, in gunnery, a hollow cast-iron ball to throw out of mortars, &c. having a vent through which the powder is put that is to burst it; when it is filled, the fusee for setting fire to the powder is driven firmly into the hole.——In ships, the *shell of a block* signifies the outer frame or case, wherein the sheave or wheel is contained. ——*To shell*, in the veterinary art, is said of an aged horse that has the teeth completely bare and uncovered.

SHELLS. The singular regularity,

beauty, and delicacy in the structure of the shells of animals, and the variety and brilliancy in the colouring of many of them, at the same time that they strike the attention of the most incurious observers, have at all times excited philosophers to inquire into and detect, if possible, the causes and manner of their formation: but the attempts of naturalists, ancient and modern, to discover this process, though often ingenious and plausible, have constantly proved unsuccessful. The variety in the figure, colours, and other characters of sea shells, is almost infinite. The most beautiful come from the East Indies and the Red Sea. The sun, by the great heat that it gives to the countries near the line, heightens the colours of the shells produced there, and gives them a lustre and brilliancy which is wanting in those of colder climates. [See CONCHOLOGY, GEOLOGY, &c.]

SHEL'TIE, the appellation given to a small but strong horse in Scotland; so called from Shetland, where it is bred.

SHEMIT'IC, an epithet for anything pertaining to Shem, the son of Noah. What are termed the *Shemitic* languages are the Chaldee, Syriac, Arabic, Hebrew, Samaritan, Ethiopic, and old Phœnician.

SHER'BET, a drink composed of sugar, lemon juice, and water, sometimes with perfumed cakes dissolved in it, with an infusion of a small quantity of rose-water. Another kind is made with honey, the juice of raisins, violets, &c.

SHERIFF, an officer in each county of England, nominated by the crown, invested with a judicial and ministerial power, and who takes precedence of every nobleman in the county during the time of his office. His judicial authority consists in hearing and determining causes in his county court, and in keeping the peace of the county; he being by the common law the principal conservator of the peace there; for which reason he is to assist the justices, and raise the posse comitatus when occasion requires. As a minister, he is bound to execute all processes issuing from the king's courts of justice. In the commencement of civil causes, he is to serve the writ, to arrest, and to take bail; when the cause comes to trial he must summon and return the jury; when it is determined, he must see the judgment of the court carried into execution. In criminal matters, he also arrests and imprisons; he returns the jury; he has the custody of the accused; and he executes the judgment of the court. It is also his duty to preserve the rights of the crown; to seize all lands devolved thereto by attainder or escheat; to levy fines and forfeitures; to seize and keep all waives, wrecks, estrays, &c. if they fall immediately to the crown; and to collect the regal rents, if so commanded by process from the exchequer. To execute these various duties, the sheriff has under him many inferior officers; as under sheriff, bailiffs, and gaolers; and the under-sheriff, in reality, performs nearly the whole business here described.

SHER'RY, a Spanish wine, growing in the neighbourhood of Xeres de la Frontera, in the province of Andalusia, near Cadiz. Red and white grapes are used indiscriminately; and that which we call dry sherry is the most esteemed.

SHEW'-BREAD, in the Jewish rites, the loaves of unleavened bread which the priest placed on the golden table in the sanctuary. They were shaped like a brick, and weighed about 8lbs. The loaves were twelve in number, representing the twelve tribes of Israel; and were to be eaten by the priest only.

SHIBBOLETH, a word which was made the criterion by which to distinguish the Ephraimites from the Gileadites, after the defeat of the former by Jephtha. The Ephraimites being unable to give the aspirate (*h*), pronounced the word *sibboleth*. See Judges xii. Hence, when some characteristic or peculiarity of a party is observed, it is common to speak of it as the *shibboleth* or watch-word of that party.

SHIELD, a broad piece of defensive armour, formerly borne on the left arm, as a defence against arrows, darts, lances, and other weapons. The shields of the ancients were of different shapes and sizes, and generally made of leather, or wood covered with leather. The surface, or as it is called in heraldry, the *field*, of the shield, or escutcheon, appears to have been in all ages decorated with figures emblematical or historical, serving to express the sentiments, record the honours, or at least distinguish the person of the warrior.

SHIL'LING, an English silver coin, equal in value to twelve pence. The word is supposed, by some, to be derived from the Latin *silicus*, which signifies a quarter of an ounce, or the 48th part of a Roman pound. In support of this etymology, it is alleged that the Saxon shilling was also the 48th part of the Saxon pound. At the time of the conquest, the shilling was worth fourpence. Afterwards the French *solidus* of twelvepence, which was in use among the Romans, was called by the name of *shilling*; and the Saxon shilling of fourpence took the Norman name of *groat* or *great coin*, because it was the largest English coin then known.

SHIN'GLES, in medicine, an eruptive disease, which spreads round the body like a girdle.——Thin boards used for covering shells and other building.——*Shingle*, round gravel, or the pebbles, &c. thrown by the sea on the beach.

SHIP, a general name for all large vessels which are built upon a peculiar principle, and adapted for the purposes of navigation; more particularly those equipped with three masts and a bowsprit, the masts being composed of a lower mast, top-mast, and top-gallant mast, each of which is provided with yards, sails, &c. Ships are of various sizes, and fitted for various uses; most of them, however, fall under the denomination of ships of war and merchant-ships. They have gradually increased in bulk from the open galleys of the ancients of fifty or sixty tons, to a timber ship of 5,000. A first-rate man-of-war carries 120 guns, 24 and 32 pounders, with a crew of

THE MEDITERRANEAN AND NORTHERN OCEANS CONTAIN A GREAT VARIETY OF SHELLS, MANY OF WHICH ARE ELEGANT AND BEAUTIFUL.

900 men; the length of her gun-deck being 205 feet and breadth 53 feet, the main-yard 106 feet, main-mast 124 feet, fore-mast 112 feet, and mizen-mast 112 feet.——*Shipping*, whatever relates to ships, including every sort of vessel employed upon the water, together with the laws, customs, and regulations connected therewith, &c.

SHIP'-BUILDING, the practical branch of naval architecture, or the art of constructing vessels for navigation, particularly ships and other vessels of a large kind, bearing masts; in distinction from *boat-building*. To give an idea of the enormous quantity of timber necessary to construct a ship of war, we may observe that 2,000 tons, or 3,000 loads, are computed to be required for a seventy-four. Now, reckoning fifty oaks to the acre, of 100 years standing, and the quantity in each tree at a load and a half, it would require forty acres of oak-forest to build one seventy-four; and the quantity increases in a great ratio, for the largest class of line-of-battle ships. A first-rate man-of-war requires about 60,000 cubic feet of timber, and uses 180,000 pounds of rough hemp, in the cordage and sails for it. The average duration of these vast machines, when employed, is computed to be fourteen years. Ship-building made but very slow progress until the introduction of the compass, when the application of astronomy to nautical pursuits at once set the mariner free from the land. Thenceforward the mariner, thrown upon the wide ocean, was brought into contact with unknown perils, to obviate which he was led to untried experiments. The art has since strode forward with giant steps. To the Italians, Catalans, and Portuguese, belong most of the advances in the earlier days of its revival; the Spaniards followed up the discovery of the new world with a rapid improvement in the form and size of their ships, some of which, taken by the cruisers of Elizabeth, carried 2000 tons. In modern times, to the Spaniards, French, and Americans, belong the credit of the progress which has been made in this important branch of art; for, strange as it may seem, Great Britain, whose security is said to be in her "wooden walls," and whose naval triumphs prove that the assertion is not vaguely made, has added comparatively but little to the beauty, speed, and excellence of them.

SHIP'-MONEY, in English history, an ancient impost upon the ports, towns, cities, boroughs, and counties of the realm, for providing ships for the king's service. This demand was revived by Charles I. in the years 1635 and 1636; being laid by the king's writ under the great seal, without the consent of parliament, was held to be contrary to the laws and statutes of the realm, and subsequently abolished.

SHIP'S PAPERS, certain papers or documents, descriptive of the ship, its owners, the nature of the cargo, &c. They consist —1st, of the certificate of registry, licence, charter-party, bills of lading, bill of health, &c. which are required by the law of England; and, 2dly, those documents required by the law of nations to be on board neutral ships, to vindicate their title to that character.

SHIRE, in English topography, the same with *county*. The word, which was originally spelt *scir* or *scire*, signifies a division. Alfred is said to have made those divisions, which he called *satrapias*, and which took the name of *counties*, after *earls*, *comites*, or *counts* were set over them. He also subdivided the satrapias into *centurias* or *hundreds*; and these into *decennas*, or *tenths of hundreds*, now called *tithings*.

SHI'RE-MOTE, the ancient name in England for the county court.

SHITTIM-WOOD, in Scripture, a kind of precious wood of which the tables, altars, and boards of the tabernacle were made. The wood is said to be hard, smooth, and very beautiful.

SHIV'ER, in mineralogy, a species of blue slate, shist, or shale.

SHIV'ER-SPAR, in mineralogy, a carbonate of lime, so called from its slaty structure; sometimes called slate-spar.

SHOAD-STONE, in mineralogy, a small smooth stone, of a dark liver colour with a shade of purple. They are found in loose masses at the entrance of mines, sometimes running in a direct line from the surface to a vein of ore. They usually contain mundic, or marcasitic matter, and a portion of the ore of the mine.

SHOAL, a shallow piece of water, or a shallow part of the sea near the coast, which often proves dangerous to navigation. Also, an immense multitude, as a *shoal* of herrings.

SHOE, a covering for the foot, usually made of leather, the material for the sole being thick and hard, and the upper part soft. The finest sort of shoes is made in London; but the manufacture is carried on upon the largest scale in Northamptonshire and Staffordshire. In former times the people had an extravagant way of adorning their feet; they wore the beaks or points of their shoes so long that they encumbered themselves in their walking, and were forced to tie them up to their knees; the fine gentlemen fastening theirs with chains of silver, or silver gilt, and others with laces. This ridiculous custom was in vogue from the year 1382, but was prohibited, on the forfeiture of 20*s*. and the pain of cursing by the clergy, in 1467.——The shoes of the Romans, like those of the Jews and Greeks, covered half of the leg, were open before, and tied with thongs called *corrigiæ*. Black shoes were worn by the citizens of ordinary rank, and white ones by the women. Red shoes were sometimes worn by the ladies, and purple ones by the coxcombs of the other sex. Red shoes were put on by the chief magistrates of Rome on days of ceremony and triumphs. The shoes of senators, patricians, and their children had a crescent upon them which served for a buckle; these were called *calcei lunati*. Slaves wore no shoes; hence they were called *cretati* from their dusty feet.——A *horse shoe* is a plate

or rim of iron nailed to the hoof of a horse to defend it from injury.——The *shoe of an anchor* is a small block of wood, convex on the back, with a hole to receive the point of the anchor fluke. It is used to prevent the anchor from tearing the planks of the ship's bow, when raised or lowered.

SHORE, the coast or land adjacent to the sea or some large river: the sea-shore has been divided by some writers into three portions, the first of which is that tract of land which the sea just reaches in storms and high tides, but which it never covers; the second part of the shore is that which is covered in high tides, but is dry at other times; and the third is the descent from this, which is always covered with water.

SHORL, in mineralogy, a substance usually of a black colour, found in masses of an indeterminate form, or in prisms of three or nine sides. The surface of the crystals is longitudinally streaked. The amorphous sort presents thin, straight, distinct columnar concretions, sometimes parallel, at other times diverging or stelliform. The mineralogists of the last century comprehended a great variety of substances under the name of *shorl*, which later observations have separated into several species, and which are now known as *actinote, augite, leucite*, &c.

SHORLA'CEOUS, in mineralogy, an epithet for such substances as partake of the nature and characters of shorl.

SHOR'LITE, a mineral of a yellowish green colour, found in irregular oblong masses or columns, inserted in a mixture of quartz and mica or granite.

SHOT, a general name for any missile discharged from cannon and fire-arms of all kinds. Shot used in war is of various kinds; as—1, *round-shot* or *balls*; those for cannon made of iron, those for muskets and pistols, of lead: 2, *double-headed shot* or *bar shot*, consisting of a bar with a round head at each end: 3, *chain-shot*, being two balls fastened together by a chain: 4, *grape-shot*, consisting of a number of balls bound together with a cord in canvas on an iron bottom: 5, *case shot* or *canister shot*, by which is meant a great number of small bullets enclosed in a cylindrical tin box: *langrel* or *langrage*, which consists of pieces of iron of any kind. Musket balls are called *small shot*; and those small globular masses of lead used by sportsmen in killing birds and other small game, are known by the name of *shot*, of different numbers according to their size. In the manufacturing of this, the liquid metal is allowed to fall like rain from a great elevation, and the cohesive principle gives rondity to grains of shot. In its descent, the drops become truly globular, and before they reach the end of their fall are hardened by cooling.——*Shot of a cable*, the splicing of two cables together, or the two cables thus united: thus, it is said, a ship will ride easier in deep water with one *shot of cable* than lengthened, than with three short cables.

SHOT'-RACKS, in a ship, wooden frames bolted to the crampings and head-ledges round the hatchways on the decks to contain the different shot.——*Shot-locker*, a hole planked up to contain the different shot.

SHREW'-MOUSE, in zoology, a small harmless animal belonging to the genus *Sorex*. It resembles the mole in its head, and in other parts the common mouse, burrows in the ground, and feeds on corn, insects, &c.

SHRIKE, or Butcher-bird, in ornithology, a genus of birds called *Lanius*, remarkable for the fierceness and cruelty of their attacks on other birds.

SHROUDS, in a ship, a range of large ropes extending from the head of a mast to the right and left sides of the ship, to support the mast. There are main shrouds, fore shrouds, mizen shrouds, bowsprit shrouds, &c.

SHROVE-TU'ESDAY, the Tuesday after Quinquagesima Sunday, or the day immediately preceding the first of Lent; being so called from the Saxon word *shrive*, to confess; that day having been employed by the people in confessing their sins to the parish priest, and thereby qualifying themselves for a more religious observance of the approaching fast.

SHRUB, a small woody plant between a bush and a tree. Many of these are ornamental plants, bearing beautiful flowers, as the acacia, lilac, &c.

SHUTTLE, an instrument used by weavers for shooting the thread of the woof in weaving from one side of the cloth to the other, between the threads of the warp.

SIAL'AGOGUE, a medicine that promotes the salivary discharge.

SIBE'RIAN, pertaining to Siberia, a name given to a great and indefinite extent of territory in the north of Asia; as, a *Siberian* winter.

SIB'ERITE, in mineralogy, red tourmalin.

SIB'YLS, in antiquity, certain women who pretended to be endowed with a prophetic spirit. They resided in various parts of Persia, Greece, and Italy; and were consulted on all important occasions. They delivered oracular answers, and, as it is pretended, wrote certain prophecies on leaves in verse, which are called *Sibylline verses*; but these Sibylline oracles seem to have been composed to answer political purposes. The number of *Sibyls*, according to Varro, was ten. The Romans kept their books with infinite care, and consulted them, on great occasions, with the utmost credulity.

SIDE'REAL, in astronomy, pertaining to the stars. A *sidereal day*, the time in which any star appears to revolve from the meridian to the meridian again, which is 23 hours 56 minutes 4 seconds, and 6‴ of mean solar time, there being 366 sidereal days in a year, or during the 365 diurnal revolutions of the sun.

SID'ERITE, in mineralogy, phosphate of iron.

SIDERI'TIS, in botany, a genus of plants,

IN GENERAL, THE SIBYLLINE BOOKS REMAINED LONGER IN AUTHORITY WITH THE ROMANS, THAN THE ORACLES WITH THE GREEKS.

class 14 *Didynamia*, order 2 *Gymnospermia*. The species are shrubs and perennials.

SIDEROCAL'CITE, in mineralogy, brown spar.

SIDEROCLEP'TE, in mineralogy, a soft and translucid substance, of a yellowish green colour, occurring in reniform or botryoidal masses.

SIDEROG'RAPHY, the art or practice of engraving on steel, by means of which, impressions may be transferred from a steel plate to a steel cylinder in a rolling-press constructed on a peculiar principle. Hence the term *siderographic* art, applied to steel plate engraving.

SID'EROMANCY, in antiquity, a species of divination performed by burning straws, &c. on red-hot iron.

SID'EROSCOPE, an instrument of French invention, for detecting small quantities of iron in any substance, mineral, animal, or vegetable.

SIDEROXY'LON, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are trees, all natives of Africa.

SIEGE, in the art of war, the encampment of an army before a fortified place, with a design to take it. A *siege* differs from a *blockade*, as in a siege the investing army approaches the fortified place to attack and reduce it by force; but in a blockade, the army secures all the avenues to the place to intercept all supplies, and waits till famine reduces the besieged to surrender.——*To raise the siege*, is to give over the attack of a place, and quit the works thrown up against it.

SI'ENITE, in mineralogy, a compound granular aggregated rock, of a grayish colour, composed of feldspar and hornblende, with a portion sometimes of quartz and black mica. It obtained its name from Syene, in Upper Egypt, whence many ancient monuments consisting of this rock have been brought.

SIER'RA, a term used for a hill, or chain of hills, particularly in Spain, the west coast of Africa, and the coasts of Chili and Peru.

SIGILLA'RIA, feasts in honour of Saturn, celebrated after the Saturnalia. At this festival little statues of gold, silver, &c. were sacrificed to the god instead of men, who had been the usual victims, till Hercules abolished the barbarous custom.

SIGN, in a general sense, a visible token or representation of anything. Also, any motion, appearance, or event which indicates the existence or approach of something else.——*Sign*, in astronomy, the twelfth part of the ecliptic. The signs are reckoned from the point of intersection of the ecliptic and equator, at the vernal equinox, and are named respectively, Aries, Taurus, Gemini, Cancer, Leo, Virgo, Libra, Scorpio, Sagittarius, Capricornus, Aquarius, Pisces. On account of the precession of the equinoxes, the positions of these constellations in the heavens no longer correspond with the divisions of the ecliptic of the same name, but are now considerably in advance of them: the constellation Aries, for example, being in that part of the ecliptic called Taurus.

SIG'NA, in antiquity, standards or ensigns among the ancients: those of the Romans usually bore the figure of an eagle; but the *signa* of the Greeks bore the figures of various animals.

SIG'NALS, certain signs agreed upon between parties at a distance, for the purpose of conveying instantaneous information, orders, &c. Signals are particularly useful in the navigation of fleets and in naval engagements. They are made by the admiral or commander-in-chief of a squadron, either in the day, or by night, whether for sailing, fighting, or the better security of the merchant-ships under their convoy. They are very numerous and important, being all appointed and determined by the lords of the admiralty, and communicated in the instructions sent to the commander of every ship of the fleet or squadron before their putting to sea.——*Day-signals* are usually made by the sails, by flags and pendants, or guns; *night-signals* are lanterns disposed in certain figures, rockets, or the firing of guns; *fog-signals*, by guns, drums, bells, &c. There are signals of evolution addressed to a whole fleet, to a division, or to a squadron; signals of movements to particular ships; and signals of service, general or particular. Signals used in the army are mostly made by beat of drum or the sound of the bugle.

SIG'NATURE, in printing, is a letter put at the bottom of the first page at least, in each sheet, as a direction to the binder, in folding, gathering, and collating them.——Also, the name of a person written or subscribed by himself.

SIG'NET, Clerk of the, an officer, in England, continually in attendance upon the principal secretary of state, who has the royal signet in his keeping for the signing of letters, grants, &c.

SIGN-MAN'UAL, in English polity, the royal signature. In a general sense, it is the signature of any one's name in his own hand-writing.

SILI'CA, or SI'LEX, in mineralogy, one of the supposed primitive earths, a constituent part of all stones; and found in great abundance in agates, jasper, flints, quartz, and rock crystal. In the latter, it exists nearly in a state of purity. Recent experiments have determined silica to be a compound substance, the base of which is a metal called *silicium*.

SILI'CATES, in chemistry, compounds of silica, or silicic acid, with certain bases, as alumina, lime, magnesia, soda, &c., constituting the greater number by far of the hard minerals which encrust the globe.

SILI'CIUM, or SILI'CON, in chemistry, the undecomposed base of silica. It may be obtained by burning potassium in silicated fluoric gas.

SILI'CULA, in botany, a short broad pod, or a two-valved pericarp, having the seeds adhering to both sutures.

SIL'IQUA, or SIL'IQUE, in botany, an oblong, membranaceous, bivalvular peri-

carp, or pod, having the seeds fixed to both sutures. Hence the term *siliquous* plants for such; and *siliculous* for those which have silicles or little pods.

SILIQUO'SÆ, one of the Linnæan natural orders of plants, including those which have siliquæ or pods for their seed-vessels, like the pea, bean, lupin, &c.

SILK, and SILK'-WORM. Silk, in its original state, is properly an animal fluid hardened by the air; being an extremely soft and glossy thread, spun by the *Bombyx* or Silk-worm, of the genus *Phalæna*. From a small egg, of the size of a pin's head, proceeds a minute dark-coloured worm, the food of which is the mulberry-leaf. After casting its skin three or four times, as its bulk increases, it becomes at length a rather large caterpillar, of a white colour, more or less tinctured with blue or with yellow. The period of its existence in this state being arrived, it ceases to eat, and soon begins to form the silken ball which renders it so famous. On the first day of its work, it makes the web, or loose outward silk by which it fastens its nest to the branch, paper, or other substance that nature or art puts in its way. On the second day it begins to form its *folliculus* or ball; and on the third is quite hid by its silk. At the end of ten days, the work is finished, and the transformation of the insect complete. In a state of nature, everything now remains quiet till the pupa becomes a *phalæna*, or moth: but where the insect is bred as an article of trade, the ball is taken from the mulberry-tree in the condition at which it is now described to be arrived, and unwound within a proper time; because if left to itself, the *phalæna* would pierce its way through, and destroy the silk. As soon as the worms have produced their balls, or cocoons, they become an article of trade; for in those countries where silk is cultivated, few persons reel off their cocoons, but sell them to others, who make this operation a separate business. The silk, as formed by the worm, is so very fine, that if each ball, or cocoon, was reeled separately it would be totally unfit for the purpose of the manufacturer; in the reeling, therefore, the ends of several cocoons are joined and reeled together out of warm water, which, softening their natural gum, makes them stick together so as to form one strong thread.——The first *silk* known in Europe appears to have been brought from China. Though this commerce began at a very early age, it was not before A. D. 555 that the arts of rearing the worms and working the silk were known to the western world. When silk was first introduced into Rome, it was so costly that it sold for its weight in gold, and was only used by a few ladies of the patrician rank. In the beginning of the reign of Tiberius, a law was passed, that no man should disgrace himself by the effeminate practice of wearing silken garments; but the profligate Heliogabalus broke this law, by wearing a dress composed wholly of silk. The fashion, thus set, was quickly followed, and from the capital it soon extended to the provinces. Greece was distinguished not only for the rearing of silk-worms, but for the skill and success with which the manufacture was carried on by the inhabitants of Thebes, Corinth, &c. In time it spread to Italy; and in 1480 it was introduced into France. For a long time the English were indebted for silk to foreign countries; but in consequence of the persecution of the Protestants in France in the year 1686, nearly 50,000 of the inhabitants fled from that country and took refuge in England; and many of them being silk manufacturers, we may trace the origin of the *silk trade* in Spitalfields. It appears, however, that there was a company of silk-women in England so early as the year 1455; but these were probably employed in needle-works of silk and thread. Italy supplied England and all other parts with the broad manufactures till 1489. In 1620 the broad manufacture was introduced into this country; and in 1686 the company of silk-throwsters employed above 40,000 persons.——As a specimen of individual enterprise in this branch of manufacture, we must notice Sir Thomas Lombe, who, about the year 1724, erected in an island on the Derwent, near Derby, a curious mill for the manufacture of silk, the model of which he had brought from Italy, at the hazard of his life. This machine was deemed so important, that, at the expiration of Sir Thomas's patent, parliament voted him 14,000*l.* for the risk he had incurred, and the expense attending the completion of the machinery. This contained 26,586 wheels; one water-wheel moved the whole, and in a day and night it worked 318,504,960 yards of organzine silk. Such, however, have been the extraordinary improvements in the arts, that this once wonderful piece of workmanship has been disused for some years, and more simple and complete machinery erected, which performs twice the work.——Among other novelties is the introduction of *glass* as a material in woven silk. To those who have never heard of it, this may well excite surprise, in consequence of its brittle nature. The fact, however, is indisputable, the new material being substituted for gold and silver thread, than either of which it is more durable, possessing besides the advantage of never tarnishing. What is technically called the warp, that is, the long way of any loom manufactured article, is composed of silk, which forms the body and groundwork, on which the pattern in glass appears as the weft or cross work. The requisite flexibility of glass thread for manufacturing purposes is to be ascribed to its extreme fineness, as not less than 50 or 60 of the original threads (produced by steam engine power) are required to form one thread of the loom. The process is slow, as not more than a yard can be manufactured in 12 hours. The work is extremely beautiful and comparatively cheap, inasmuch as no similar stuff where bullion is really introduced can be purchased for anything like the price at which this is sold: added to this, it is, as far as the glass is concerned, imperishable.

SILK-COTTON, in botany, the *Bombax*

IN EARLY TIMES, WHEN SILK WAS FIRST BROUGHT FROM THE EAST INTO EUROPE, IT WAS CONSIDERED TOO EXPENSIVE EVEN FOR ROYALTY.

SILVER IS NOT OXYDIZED BY EXPOSURE TO THE AIR; NEITHER IS IT ALTERED BY BEING KEPT UNDER WATER.

ARSENIC FORMS AN ALLOY WITH SILVER IN THE PROPORTION OF SIXTEEN OF THE FORMER TO ONE HUNDRED OF THE LATTER.

of Linnæus, a tree in the East Indies, so called from the down in its seed-pod, of which articles of clothing are manufactured..

SILK'-THROWER, or SILK'-THROWSTER, one who winds, twists, spins, or throws silk, to prepare it for weaving.

SIL'LIMANITE, a greyish-brown mineral, occurring in long, slender, rhombic prisms; found in Connecticut, and named in honour of professor Silliman.

SIL'LON, in fortification, a work raised in the middle of a ditch to defend it when it is too wide.

SIL'PHA, in entomology, a genus of insects of the *coleopterous* order; known in English as the carrion-beetle.

SILU'RUS, in ichthyology, a genus of fishes of the order *Abdominales*. There are about thirty species of this fish. The *Silurus electricus* is the most singular: it is found in the rivers of Africa, is about twenty inches long, of a pale ash colour, with a few blackish spots towards the tail; when touched it communicates a shock attended with trembling and pain of the limbs, but less violent than that of the torpedo.

SIL'VER, in mineralogy, a well-known precious metal, of a white colour, and of the most lively brilliancy; next to gold, the most malicable of all metals. It is found in different parts of the earth; but it is in the centre of the Andes, in situations which, though immediately exposed to the perpendicular rays of the sun, are constantly covered with snow, that nature has most abundantly distributed this metal. The silver mines of Mexico and Peru far exceed in value the whole of the European and Asiatic mines: for we are told by Humboldt, that three mines, in the space of three centuries, afforded 316,023,883 pounds troy of pure silver; and he remarks that this quantity would form a solid globe of silver, 91,206 English feet in diameter. The most important silver mines of Europe at present, are those of Saxony, Hungary, and the Hartz. The annual produce of these united is about 180,000*l*. Within the last quarter of a century there has been a great increase in the produce of silver from the Russian mines. The celebrated mines of Konigsberg, in Norway, once so rich in native silver, are now nearly exhausted. Silver has also been obtained from some of the lead mines of Great Britain. Bishop Watson, in his *Chemical Essays*, observes, that by the silver which was produced from the lead mines in Cardiganshire, Sir Hugh Middleton is said to have cleared 2000*l*. per month, and that this enabled him to undertake the great work of bringing the New River from Ware to London. Silver is exceedingly ductile and tenacious. It may be beat out into leaves only the one hundred and sixty thousandth part of an inch thick, and drawn into wire the thousandth part of an inch thick. It melts at 28° of Wedgwood's pyrometer; and when exposed to a temperature considerably higher, it becomes volatilized. Atmospheric air has no effect upon it, except when it contains sulphurous vapours, sulphuretted or phosphuretted hydrogen gases. It unites to phosphorus and sulphur. It slightly unites with the brittle acidifiable metals. With gold it forms what is termed *green gold*. Copper renders it harder without much impairing its ductility. It is oxydized and dissolved by several of the acids; and the acid solutions of silver are decomposable by the alkalies, earths, and by the greater number of the metals.——Different methods are employed in different countries to extract silver from its ores. In Mexico, Peru, &c. the mineral is pounded, roasted, washed, and then triturated with mercury in vessels filled with water: and a mill being employed to keep the whole in agitation, the silver by that means combines with the mercury. The alloy thus obtained is afterwards washed, to separate any foreign matters from it, and then strained and pressed through leather. This being done, heat is applied to drive off the mercury from the silver, which is then melted and cast into bars or ingots.

SIL'VERING, the application of silver-leaf to the surface of metals, glass, &c., or the art of covering the surfaces of bodies with a thin film of silver. Copper and brass are the metals on which the silverer most commonly operates. When silver-leaf is to be applied, the methods prescribed for gold-leaf are suitable. [See GILDING.]

SIL'VER-TREE, (*leucadendron argenteum*), in botany, a large evergreen shrub, with handsome foliage: it is a native of the Cape of Good Hope, and belongs to the *Proteaceæ*, the most remarkable family of plants in the southern hemisphere. More than four hundred species of these plants are known, which are arranged in numerous genera. The greater part are shrubs or small trees, but not all: the leaves are simple, entire, or serrated; the flowers are somewhat distant, upon solitary footstalks, or in clusters, spikes, or corymbs; sometimes they are sessile, situated upon a common receptacle, surrounded with a many-leaved involucre, or are disposed in scaly cones: the colour is green, yellow, or red: in short, the remarkable differences in the habit, flowers, and foliage of these plants have given rise to the name of the order.

SIM'IA, the APE, in natural history, a genus of the class *Mammalia*, of the order *Primates*. Animals of this genus are commonly divided into such as have no tails; such as have only very short ones; such as have very long ones, and such as have prehensile tails, with which they can lay hold of any object at pleasure. There are upwards of sixty species of this genus.

SIM'ILE, in rhetoric, a comparison of two things, which though different in other respects, agree in some strong points of resemblance; by which comparison the character or qualities of a thing are illustrated or presented in an impressive light.

SIMO'NIANS, in church history, a sect of ancient heretics, so called from their founder, Simon Magus, or the magician.

SIM'ONY, in law, the illegal buying or

selling ecclesiastical preferment; or the corrupt presentation of any one to a benefice for money or reward. The word is derived from the Chaldæan Magus, Simon, who, according to the Acts of the Apostles, wished to buy of them the power of working miracles.

SIMOON', a hot suffocating wind, that blows occasionally in Africa and Arabia, generated by the extreme heat of the parched deserts and sandy plains. Its approach is indicated by a redness in the air, and its fatal effects are to be avoided by falling on the face and holding the breath.

SIM'PLE CON'TRACT, in law, a term applied to debts, where the contract upon which the obligation arises, is neither ascertained by matters of record, nor yet by deed or special instrument.

SIM'PULUM, in antiquity, a vessel resembling a cruet, used at sacrifices and libations for taking a very little wine at a time.

SIMULA'TION, the assumption of a deceitful appearance or character. It differs from *dissimulation*, inasmuch as the former assumes a false character, while the latter only conceals the true one; but both are truly designated by the word *hypocrisy*.

SIN'APISM, in medicine, a mustard poultice; a mixture of mustard and vinegar generally applied to the calves of the legs or soles of the feet as a stimulant, and employed in low states of fevers and other diseases.

SIN'CIPUT, in anatomy, the forepart of the head, reaching from the forehead to the coronal suture.

SINE, in geometry, a right line drawn from one end of an arc perpendicular to the radius drawn to the other end.

SI'NECURE, a church benefice without cure, or care, or guardianship of souls; as where there is a parish without church or inhabitants. The word is applied to any post that brings profit without labour.

SI'NE DI'E, in parliamentary language, a Latin phrase used for the adjournment of a debate without fixing a day when it shall be resumed.——In law, a term applied to a defendant when judgment is given in his favour, and he is suffered to go *sine die*, or dismissed the court.

SINGING. [See MUSIC, MELODY, &c.]

SING'ING BIRDS. The vocal inmates of the grove, as poets have been pleased to term these feathered songsters, have furnished man, in every clime, with a source of delight not unmixed with wonder; and we believe there are few persons who, at times, have not been sensible of the exhilarating effects arising from their dulcet warblings. In a correct sense of the term, the female of no species of birds ever sings. To her is allotted the care and toil of incubation, and the principal share of nursing the helpless brood; but while she is performing her parental duties, her mate is exerting all his vocal blandishments. The power of song is chiefly effected by the disposition of the larynx, which in birds is not, as in mammifera and amphibia, placed wholly at the upper end of the windpipe; but, as it were, separated into two parts, one placed at each extremity. Parrots, ravens, starlings, bullfinches, &c. have been taught to imitate the human voice, and to speak some words: singing birds also, in captivity, readily adopt the song of others, learn tunes, and can even be made to sing in company. In general, however, the songs of birds in the wild state appear to be formed by practice and imitation. Those who have paid attention to the singing of birds, know also that their voice, energy, and expression, differ as widely as in man; and, agreeably to this remark, Mr. Wilson, the celebrated ornithologist, says, he was so familiar with the notes of an individual wood-thrush, that he could recognise him among all his fellows the moment he entered the woods. The singing of most birds seems entirely a spontaneous effusion, produced by no exertion, or occasioning no lassitude of muscle, or relaxation of the parts of action. In certain seasons and weather, the nightingale sings all day and most part of the night; and we never observe that the powers of song are weaker, or that the notes become harsh and untuneable, after these hours of practice. The cuckoo is probably the only bird that seems to suffer from the use of the organs of voice.

SIN'ISTER, in heraldry, a term denoting the left side of the escutcheon.——*Sinister aspect*, in astrology, an appearance of two planets happening according to the succession of the signs; as, Saturn in the same degree as Aries, &c.

SINK'ING FUND, in politics, a term applied to a portion of the public revenue set apart to be applied to the reduction or diminution of the national debt.

SIN'NET, in seamen's language, rope yarn bound about ropes to prevent them from galling.

SI NON OM'NES, in law, a writ on association of justices, by which, if all in commission cannot meet at the day assigned, it is allowed that two or more of them may proceed to finish the business.

SIN'OPER, in mineralogy, red ferruginous quartz, occurring in small perfect crystals, and in masses resembling some varieties of jasper.

SIN'TER, in mineralogy, a substance which appears under different forms, and is variously designated. *Calcareous sinter* is a variety of carbonate of lime, composed of successive layers, concentric, plane, or undulated, and nearly or quite parallel. *Siliceous sinter* is of a dull grayish white colour, and of a light, brittle, and fibrous texture. *Opaline siliceous sinter* is whitish, with brown, black, or bluish spots, and its fragments appear to be dendritic. *Pearl sinter*, or *florite*, has a gray hue, and occurs in cylindrical, stalactitic, and globular masses.

SIN'UATE, in botany, an epithet for a leaf that has larged curved beaks in the margin, as in the oak.

SI'NUS, in anatomy, a cavity in a bone or other part, wider at the bottom than at the entrance. The veins of the dura

IN 1716, SIR ROBERT WALPOLE PROJECTED THE SINKING-FUND SYSTEM, WHICH WAS BROUGHT INTO FULL OPERATION BY MR. PITT.

mater are so termed.——In surgery, a long, hollow, narrow track, leading to some abscess, in which pus is collected.

SI'PHON, or SY'PHON, in hydraulics, a bent pipe or tube whose ends are of an unequal length; used for drawing liquor out of a vessel by causing it to rise over the rim. The short end being inserted in the liquor, the air is exhausted by being drawn through the longer one. By the weight of the atmosphere, the liquor then rises to supply the vacuum, till it reaches the top of the vessel, and then flows over and will continue to run till it is all exhausted.

SIPHO'NIA, in botany, a genus of plants, class 21 *Monoecia*, order 8 *Monadelphia*. The single species is the *Siphonia elastica*, the elastic-gum-tree, so called because *gum-elastic* is extracted from it.

SI'REN, in antiquity, a kind of fabulous animal, otherwise called a mermaid. The sirens are represented by Ovid, &c. as sea monsters, with women's faces and the tails of fish; and by others decked with plumage of various colours. The three sirens are supposed to be the three daughters of the river god Acheloûs by the muse Calliope, and are called Parthenope, Ligea, and Leucosia. Homer makes mention of only two sirens, and some others reckon five. Virgil places them on rocks where vessels are in danger of splitting. Some represent them as such charming monsters, who sung so harmoniously, that sailors were wrecked on their rocks without regret, and even expired in raptures. Dr. Burney supposes they were excellent singers, but of corrupt morals.——*Siren*, a species of lizard in Carolina, constituting a peculiar genus, destitute of posterior extremities and pelvis.

SI'REX, in entomology, a genus of insects of the order *Hymenoptera*. It is called in English the tailed wasp.

SIRI'ASIS, in medicine, an inflammation of the brain, often proceeding from the intense heat of the sun. It is peculiar to children, and attended with a hollowness of the eyes and a depression of the fontanella.

SIRIUS, or the Dog-star, in astronomy, a very bright star of the first magnitude, in the mouth of the constellation *Canis major*. This is one of the earliest named stars in the heavens, and is supposed by some to be the nearest to the earth. Hesiod and Homer mention only four or five constellations, or stars, and this is one of them. Sirius and Orion, the Hyades, Pleiades, and Arcturus, are almost the whole of the old poetical astronomy. The three last the Greeks formed of their own observation, as appears by the names; the two others were Egyptian. Sirius was so called from the Nile, one of the names of that river being Siris; and the Egyptians, seeing that river begin to swell at the time of a particular rising of this star, paid divine honours to it, as the star of the Nile.

SIROC'CO, a periodical wind which generally blows in Italy and Dalmatia every year about Easter. It blows from the south-east by south, and is attended with heat, but not rain; its ordinary period is twenty days, and it usually ceases at sunset. When the sirocco does not blow in this manner, the summer is almost free from westerly winds, whirlwinds, and storms. This wind is prejudicial to plants, drying and burning up their buds; and also causes an extraordinary weakness and lassitude in men. In the summer time, when the westerly wind ceases for a day, it is a sign that the sirocco will blow the day following, which usually begins with a sort of whirlwind.

SISTRUM, in antiquity, a musical instrument, of an oval shape, used by the Egyptians in the worship of Isis.

SISYM'BIRUM, in botany, a genus of plants, class 15 *Tetradynamia*, order 2 *Siliquosa*.——*Sisymbrium nasturtium*, or the water-cress, is an indigenous plant, growing plentifully in brooks and stagnant waters. When eaten as a salad, the leaves have a moderately pungent taste, and emit a quick penetrating smell; and they are acknowledged by the medical profession to possess considerable anti-scorbutic qualities.

SISYRIN'CHIUM, in botany, a genus of plants, class 16 *Monadelphia*, order 1 *Triandria*. The species are bulbous plants, and natives of the Cape of Good Hope.

SITOPH'YLAX, in Grecian antiquity, an Athenian magistrate, who had the superintendence of the corn, and was to take care that no one bought more than was necessary for the provision of his family.

SIT'TA, in ornithology, a genus of birds, of the order *Picæ*: known in English as the nut-hatch.

SIXTH, in music, an interval formed of six sounds, or five diatonic degrees. There are four kinds of *sixths*, two *consonant* and two *dissonant*.

SIZE, a glutinous substance prepared from different materials, and used by plasterers, painters, and others. It is made from the shreds and parings of leather, parchment, vellum, &c.

SIZ'EL, in coining, the residue of bars of silver, or other metal, after the pieces are cut out for coins.

SI'ZER, in Cambridge university, a student of the rank next below that of a pensioner.

SKATE, in ornithology, a flat fish of the ray kind (*Raia batis*), called the variegated ray fish. It is the largest and thinnest of the genus, some of them weighing nearly 200lbs.

SKEL'ETON, in anatomy, an assemblage of all the bones of an animal body, dried, cleansed, and disposed in their natural situation, and kept in that order by means of wires, &c. When the bones are connected by the natural ligaments, it is called a *natural* skeleton; when by other means, it is termed an *artificial* skeleton.

SKIN, in anatomy, one of the principal integuments of the body, consisting of three laminæ, namely, the *cuticle* or scarf skin, which is the outermost; the *rete mucosum*, or second; and the *cutis vera*, or real skin, the third. On viewing the surface of the skin, even with the naked eye, we find it

porous; more so in some places than others; and the pores are also larger in some parts than others. Some of these pores are ducts of sebaceous glands, and others serve not only to transmit hairs, but, it is supposed, the greatest part of the perspirable matter itself. The *rete mucosum* gives the colour to the skin: it is black in the negro [See NEGRO]; white, brown, or yellowish, in the European. The skin is extremely distensible and elastic; it is thickest on those parts intended by nature to bear weight and pressure, consequently it is thick on the back, the soles of the feet, and the palms of the hands. It is thinner on the fore part of the body, on the insides of the arms and legs, and where its surfaces touch opposite surfaces.——*Skin*, in commerce, the hairy or other membrane stripped off any animal to be prepared by the tanner, skinner, or parchment-maker.

SKINK, in the natural history of reptiles, the common name of a genus of lizards found in warm climates, all of which have a long body covered with rounded imbricate scales.

SKOL'EZITE, a mineral, occurring crystalized and massive, colourless and nearly transparent. When a small portion of it is placed in the exterior flame of a blowpipe, it twists like a worm, becomes opaque, and is converted into a glassy substance.

SKOR'ADITE, a mineral of a greenish colour, resembling the martial arseniate of copper. It occurs massive, but is generally crystalized in rectangular prisms.

SKULL, the bony covering of the brain, consisting of three divisions, namely, the *sinciput*, or fore part; the *occiput*, or hind part; and the *vertex*, or crown. It forms the forehead, and every part of the head except the face.

SKUNK (*mephitis putorius*), in zoology, a carnivorous quadruped, about the size of a cat, and allied to the weasel and badger tribe; inhabiting most parts of North America, and celebrated for the intolerable stifling stench which it discharges when threatened with danger, and which is its defence against its enemies. Such, indeed, is the offensive nature of the fluid which the skunk ejects, that the smallest drop is sufficient to render clothes detestable to the wearer for a great length of time, and without any perceptible diminution in intensity. The genus is exclusively American.

SKY, the name we give to the blue expanse of the heavens, or the region which surrounds the earth beyond the atmosphere. Sir Isaac Newton attributes the azure colour of the sky to vapours beginning to condense there, and acquiring a sufficient consistence to reflect the most reflexible rays; but whatever be the cause, the sky assumes a different aspect as seen in different countries, which is accounted for by the different degrees of the rarefaction of the air, as well as of the nature of terrestrial exhalations: on these varieties, indeed, the beauty of a climate partly depends. The azure arch, which, by an optical illusion, on every side limits our view, seems to be lower in England than it is in Italy. In vain do we look for that pure, serene, and boundless sky, that atmosphere of clear blue, or of vivid red, which so much contributed to inspire a Raphael and Correggio. But even the Italian sky is said to be cloudy in comparison with that which, in summer, canopies the islands of the Pacific Ocean.

SKY'-SCRAPER, in ships, a small triangular sail sometimes set above the royal.

SLAB, in carpentry, an outside plank or board sawn from the sides of a tree, which is frequently of very unequal thickness.—— In masonry, a table of marble for hearths and other purposes.

SLAM, in chemistry, a substance frequently produced in the making of alum, by calcining it too much or too little.

SLATE, a kind of stone of a bluish or gray colour, which, when first dug from the quarry, is of an exceedingly soft texture, and is therefore easily cut or split into plates for coverings of the roofs of houses, paving, &c. Used in the place of tiles, the blue slate is a very light and durable covering: the gray slate is much more lasting than tiles; but slating of either kind is expensive, because the roof must be first covered with boards, to which the slates are fastened with tacks and fine mortar. The slate principally in use in London is brought from Wales, and it is thence forwarded to all parts of the United Kingdom. There are also in use some other kinds of slate, the best sort of which is the Westmoreland slate. The *patent slating*, as it is called, consists in selecting the largest slates, and those also of a uniform thickness. Neither battening nor boarding is required for these slates, and a great saving of the timber takes place, besides diminishing the weight of the roof.——*Drawing slate, or black chalk*, has a grayish-black colour; is very soft, sectile, easily broken, and adheres slightly to the tongue. It occurs in beds in primitive and transition clay-slate; also, in secondary formations. It is used in crayon drawing, its trace upon paper being black and regular.——*Whet slate, or Turkey hone*, is a slaty rock, containing a great proportion of quartz, in which the component particles are so very small as to be scarcely discernible.——*Mica slate* is composed of the minerals mica and quartz, the mica being generally predominant.

SLA'VERY. We find no mention of slaves before the deluge; but immediately after, *viz.* in the curse of Canaan: whence it is inferred, that servitude increased soon after that period; for in Abraham's time we find it was generally established. Some attribute its origin to Nimrod, because it was he who first began to make war, and, consequently, to make captives; dooming such as he took, either in battles or irruptions, to a state of slavery. Among the Romans, when a slave was set at liberty, he changed his name into a surname, and took the *nomen* or *prænomen* of his master; to which he added the *cognomen* he had been called by when a slave.—

THE DRAWING SLATE, WHICH IS USED AS A DRAWING MATERIAL, COMES FROM ITALY, SPAIN, AND BAYREUTH, IN THURINGIA.

The following energetic lines by Mr. Mackay, in his "Hope of the World," will better illustrate this part of the subject than anything we could offer :—

'Thus hath it been from earth's remotest age.
Though black the record, history's fearful page
Hath many blacker ; and amid the few
That cheer the darkness with a brighter hue,
There still remain the dim red spots that show
The strong man's injury, the weak man's woe.
Egypt of old pursued the arts of peace,
And wit and learning bless'd the shores of Greece ;
Imperial Rome, amid her ruins hoar,
Left proofs of greatness never reach'd before ;
But what their triumphs ?—Whose sad hands were they
That piled the pyramids to last for aye ? [gate
Who raised the walls, who built each mighty
With which high Thebes girt herself in state ?
Who rear'd old Babylon's most gorgeous fanes ?
Who shaped of Luxor the august remains ?
What were the millions, when Athena's name
For art and learning was the first to fame ?
What were the multitudes when Rome was great ?
What rights had they, or value in the state ?
All slaves and helots ! — Slaves were they whose hands
Uprear'd the pyramids on Egypt's sands :
Slaves built the city with the brazen wall,
And hundred gates, more marvellous than all ;
Slaves to be lash'd and tortured and resold,
Or maim'd and murder'd for a fine of gold.
Helots degraded, scarce esteem'd as man,
Having no rights, for ever under ban,
Were half the world when ancient Homer sung,
And wit and wisdom flow'd from Plato's tongue.
Slaves were the swarming multitudes of Rome,
Having no hope, no thought of better doom ;—
Fetter'd in body and enslaved in mind,
Their mental eye-balls sear, and dark, and blind,
They crawl'd mere brutes, and if they dared complain,
Were lash'd and tortured until tame again !"

Yes, it is universally admitted, that slavery is directly opposed to the nature of man, and has always had a palsying influence on the industry and morality both of the masters and the slaves. Among the many evils which have originated from it are, the barbarous exhibitions of gladiators, the encouragement of the greatest sensuality and indolence, an unparalleled disregard of human life, the corrupt character of the freedmen, and the outrage of the slave when he breaks his chains—from the horrible war in Italy, 70 B. C. down to the atrocities of the Haytian revolution, and the bloody insurrections on the islands of Barbadoes in 1816, and several more recent ones. That infamous traffic, the African slave-trade, was commenced by the Portuguese in 1442: the trade, however, was but of trifling extent till the 16th century. But the importation of negroes into the West Indies and America having once begun, it gradually increased, until the extent and importance of the traffic rivalled its cruelty and guilt. It is not, however, to be supposed that the sufferings of the slaves created no sympathy in the Christian world, or that the gross iniquity of those who encouraged the inhuman traffic was not again and again denounced by distinguished individuals in this and other countries ; but the profits of the slave-dealers and the general supineness of the public united to defeat the disinterested efforts of humanity. At length, in 1776, the subject was brought before the notice of the British parliament, but without success. In 1787 it was taken up more systematically; and a committee being formed, such a mass of evidence was collected in proof of the enormities produced by the slave-trade, that a great impression was made on the public mind. By the zealous perseverance of Messrs. Granville Sharp, Clarkson, and Wilberforce, supported as they were by Burke, Pitt, Fox, and other distinguished men in both houses of parliament, this feeling was not suffered to die away ; and though the struggle continued year after year, with various success, the friends of humanity ultimately triumphed ; a bill for the total and immediate abolition of the slave-trade having, in 1807, been carried in both houses by immense majorities. This great question was not, however, wholly set at rest ; for though the abolition of the slave-trade was effected, the liberation of the unhappy beings already in a state of slavery was not. It was right that the interests of the slave proprietors should be consulted, and it appeared just that a compensation should be made them if the freedom of their slaves should be decreed. This was a most important affair, in a financial point of view ; and it required no little courage on the part of the legislature to meet the question. But even this has been accomplished. By the statute 3 & 4 Will. iv. c. 73, it was enacted, that on the 1st of August, 1834, slavery was to cease throughout the British dominions, and that the then existing slaves were to become apprenticed labourers ; the term of their apprenticeship partly ceasing on the 1st of August, 1838, and partly on the 1st of August, 1840 ; when the black and coloured population became altogether free. To attain this mighty object, the sum of 20,000,000*l.* was distributed in certain proportions, and according to certain conditions, to the planters, as a compensation for the loss of their slaves. Upon this subject we so heartily concur with the Editor of the *Athenæum*, that we shall avail ourselves of the sentiments he expresses in closing his review of Mr. Mackay's poem :—"We know not that history, from its commencement, presents any nation, at any one moment, in such an attitude of moral grandeur as that of Britain, on the day when an all but unanimous Parliament, representing an all but unanimous people, freely voted twenty millions of the money, which for all other purposes it doled out with such a niggard hand, for an object

in which no selfish interests were involved —purely to do a great moral right, and redress a great moral wrong. For that one unalloyed act alone, she is foremost among the nations;—and the world is her debtor, too, for all that she has done to establish the principle of peace. A fearful debt on that head, as on the other, she had, indeed, to wipe off:—but it may be unhesitatingly said, that a more important step has been made towards the happiness of mankind, in the last twenty years, by the European recognition of this one principle, than by any other fact since the promulgation of that religion itself of whose precepts this wisdom is a part. It is an entire revolution in the politics of the world, all whose ages and nations till this day have arbitrated with the sword."

The Horrors of a Slave Ship.—Mr. R. Walsh, in his Notices of Brazil, says, in describing a slave-ship, examined by the British man-of-war in which he returned from Brazil, in May, 1829, "She had taken in, on the coast of Africa, 336 males and 226 females, making in all 562, and had been out seventeen days, during which she had thrown overboard fifty-five. The slaves were all enclosed under grated hatchways, between decks. The space was so low, that they sat between each other's legs, and stowed so close together, that there was no possibility of their lying down, or at all changing their position by night or day. As they belonged to, and were shipped on account of, different individuals, they were all branded, like sheep, with the owners' marks, of different forms. These were impressed on their breasts, or on their arms, and as the mate informed me, with perfect indifference, burnt with a red-hot iron! Over the hatchway stood a ferocious looking fellow, with a scourge of many twisted thongs in his hand, who was the slave-driver of the ship; and whenever he heard the slightest noise below, he shook it over them, and seemed eager to exercise it." The author proceeds to state, that these poor creatures were packed up and wedged together as tight as they could cram, in low cells, three feet high, so that they had not more than 23 square inches for each man, and 13 inches for each woman; while the heat of these horrid places was so great, and the odour so offensive, that it was quite impossible to enter them, even had there been room. The English officers insisted that the poor suffering creatures should be admitted on deck, to get air and water; and "they came swarming up, all in a state of total nudity, like bees from the aperture of a hive, till the whole deck was crowded to suffocation from stem to stern; so that it was impossible to imagine where they could all have come from, or how they could all have been stowed away. After enjoying, for a short time, the unusual luxury of air, some water was brought; it was then that the extent of their sufferings was exposed in a fearful manner. They all rushed like maniacs towards it. No entreaties, or threats, or blows, could restrain them; they shrieked and struggled, and fought with one another, for a drop of this precious liquid, as if they grew rabid at the sight of it." It is melancholy to add, that the wretched captives were soon again doomed to their loathsome dungeon: for the English ship was obliged to release the slaver, as it could not be proved after a strict examination, that he had exceeded the privilege, allowed to Brazilian ships, of procuring slaves south of the line.——Another appalling instance, fresh in our recollection, was related at the first anniversary meeting of the "Society for the Extinction of the Slave-trade, and for the Civilization of Africa," held at Exeter-hall, London, June 1, 1840. His Royal Highness Prince Albert presided; and in introducing the subject, he expressed his deep regret that the benevolent exertions of England to abolish the horrid traffic in human beings, which he characterized as "at once the desolation of Africa and the disgrace of Europe," had not hitherto proved effectual. The meeting to which we are alluding was for the purpose of carrying out a project, as extensive and benevolent as it was glorious; nothing less than the introduction of the arts of peace and the blessings of Christianity, throughout benighted and degraded Africa. We do not pretend to give even the most concise sketch of the general proceedings: we merely refer to them in order to introduce the following awful fact, as quoted by Sir R. Peel, from a public paper, entitled "The Shipping List of the Cape of Good Hope," dated March 17, 1840, and which was there inserted among other miscellaneous matter, as an article of intelligence. It ran thus: "Loss of Slavers at Mozambique Harbour, during a hurricane: On the 24th of January, 1840, during a hurricane from the south-east, two slavers, a ship and a brig, were wrecked at Mozambique harbour, but the crews of both, and 200 slaves on board the brig were saved. The ship had arrived the preceding day, and had not taken in any slaves. It was reported that the brig, commanded by a Spaniard, had originally 900 slaves on board, but during the hurricane the hatches had been battened down, and on opening them 300 were found to have died from suffocation. Again the hurricane came on; the hatches were battened down a second time, and the consequence was, that 300 more of the slaves perished from the same cause, and 100 of the remaining 300 died on the passage to Mozambique harbour." And what, said the right hon. baronet, had been the conduct of the parties to this mortality? Why, *they returned for the purpose of getting a fresh supply!* Well, indeed, might he exult in the prospect he saw around him; and hail it as the omen of better days; and truly might he say, as he complimented the royal president on his character and position, as well as on the part he had that day taken—"it is not unworthy of the illustrious station you occupy on the right hand of the throne of England—it is not unbecoming this high station, these great advantages

THE SLAVE-TRADE GAVE RISE TO INTERMINABLE WARS AMONG THE AFRICAN TRIBES, AND WAS A SOURCE OF PROFIT TO THE PETTY DESPOTS.

and these proud recollections, that you should be called on with your own hand to lay the corner-stone of an enterprise, which has for its object to rescue Africa from debasing superstitions, and to put an end to her miseries by the introduction of the arts of civilization and of peace; and, above all, to rescue Europe and the white race, as well as the name of Christianity, from the pollution of crimes which fill the mind with horror and disgust."

SLED, SLEDGE, or SLEIGH, a carriage or vehicle moved on runners, much used in America for carrying timber, stone, and other weighty materials. In England the word *sledge* is most commonly used; in America, where the vehicle is in great request, it is called a *sled* or *sleigh*. In Lapland the sledges are drawn by reindeer.

SLEDGE, in husbandry, a carriage without wheels, but shod with iron, on which ploughs and other implements are drawn from place to place. In Russia and other northern countries, vehicles nearly similar are used in the winter instead of wheel carriages.

SLEEP, one of the most mysterious phenomena in the animal world; a state wherein the body appearing perfectly at rest, external objects act on the organs of sense as usual, without exciting the usual sensations. The voluntary exertion of our mental and corporeal powers being suspended, we rest unconscious of what passes around us, and are not affected by the ordinary impressions of external objects. Sleep is generally attended with a relaxation of the muscles, but the involuntary motions, as respiration and the circulation of the blood, are continued. We all feel that it is the natural rest or repose necessary to restore the powers of the body and mind, when exhausted or fatigued; yet the mind is often very active in sleep; but its powers not being under the control of reason, its exercises are very irregular. Sleep repairs the spirits, which are dissipated by watching; and consequently it restores the strength of those who are weak, indisposed, or labour much. It likewise promotes perspiration, contributes greatly to digestion, and still more to nutrition. But it must not be forgotten that too much sleep makes a person sluggish, heavy, dulls the faculties, and renders him unfit for business.——*Sleep of Plants*, the folding of their leaves, and drooping appearance in the night.

SLEEP'ER, an animal that lies dormant in winter. [See DORMANT.]——In building, the oblique rafter that lies in a gutter.——In ship-building, a thick piece of timber placed longitudinally in a ship's hold, opposite the several scarfs of the timbers, for strengthening the bows and stern-frame, particularly in the Greenland ships; or a piece of long compass-timber layed and bolted diagonally upon the transoms.——On railroads, the wooden bearings or supports to which the iron rails are fastened.

SLEET, in gunnery, the part of a mortar passing from the chamber to the trunnions for strengthening that part.——A fall of rain and snow together in fine particles.

SLEIGHT OF HAND, tricks performed by persons who, by great practice, or confederacy with others, perform acts apparently out of the course of nature, which the vulgar and ignorant believe, and even the intelligent admire.

SLICH, in metallurgy, the ore of any metal, particularly of gold, when it has been pounded and prepared for further working.

SLI'DING-RULE, a mathematical instrument used to determine measure or quantity without compasses, by sliding the parts one by another.

SLIP, a place lying with a gradual descent on the banks of a river or harbour convenient for ship-building.——In horticulture, such portions of plants as are slipped off from the stems or branches for the purpose of being planted out as sets.

SLITTING-MILL, a mill where iron bars are slit into nail rods, &c.

SLOE (*prunus spinosa*), in botany, a small wild plum, the fruit of the black-thorn.

SLO'E-WORM, in entomology, an insect found on the leaves of the sloe-tree, which often changes its skin and assumes different colours. It afterwards becomes a four-winged fly.

SLOOP, a vessel of one mast, the main-sail of which is attached to a gaff above, to a boom below, and to the mast on its foremost edge; differing from a cutter by having a fixed bowsprit and a jib-stay.——*Sloop of war*, a vessel rigged either as a ship, brig, or schooner, and usually carrying from 10 to 18 guns.

SLOPS, in seamen's language, a name given to all species of wearing apparel, bedding, &c. which are supplied to his majesty's ships in commission.

SLOTH, in zoology, the *Bradypus* of Linnæus, a South American quadruped, proverbial for the slowness of its motions; but it climbs more easily than it walks, and seems quite at home when resting suspended on the branches of trees. The fore-feet or arms are much longer than the hinder, and when the sloth is on the ground it is obliged to draw itself along upon its elbows.

SLOUGH (pron. *sluff*), in surgery, the dead part which separates from the living in mortification; or the part that separates from a foul sore: hence the term *to slough off*. Also (with the same pronunciation), the skin or cast skin of a serpent.——*Slough* (pron. *slou*), a place or hole full of deep mud or mire.

SLOW'-WORM, in zoology, a small kind of viper, not very venomous; the blind worm.

SLUG, in entomology, a variety of the snail tribe. Also, a cylindrical, cubical, or irregularly shaped piece of metal shot from a gun.

SLUICE, the stream of water issuing through a flood-gate. The word is, however, used indiscriminately either for the stream that passes through the flood-gate, or the gate itself.

SLUR, in music, a mark connecting notes that are to be sung to the same syllable, or made in one continued breath of a wind instrument, or with one stroke of a stringed instrument.

SMALL-POX, in medicine, a very contagious pustular disease. [See VARIOLA, COW-POX, &c.]

SMALTS, or SMALT, an oxyde of cobalt and melted glass pounded; used in paper-making and various other arts, particularly in the painting of earthenware.

SMARAGD, another name for the emerald. Hence, *smaragdine*, an epithet for anything pertaining to or resembling an emerald; of an emerald green.

SMARAG'DITE, a mineral, otherwise called *green diallage*.

SMELT, in ichthyology, a small and delicate flavoured fish.

SMI'LAX, in botany, a genus of plants, class 22 *Dioecia*, order 6 *Hexandria*. The species are perennials, including the medicinal smilax or sarsaparilla.

SMEL'LING, that sense which resides in the nerves distributed over the membrane that lines the interior of the nostrils, and powerful in proportion to its quantity and formation, being far more sensible in some animals than in others. According to Boerhaave, the act of smelling is performed by means of odorous effluvia, floating in the air, being drawn into the nostrils, in inspiration, and struck with such force against the fibrillæ of the olfactory nerves, as to shake them, and give them a vibratory motion; which action, being communicated thence to the common sensory, occasions an idea of a sweet or fetid, a sour or an aromatic object, &c. And he further observes, that the matter in animals, vegetables, fossils, &c. which chiefly affects the sense of smelling, is that subtile substance inherent in their oily parts, called spirit; for that, when this is taken away from the most fragrant bodies, what remains has scarce any smell at all; but this, poured on the most inodorous bodies, imparts to them a fragrancy. Volatile particles chiefly are distinguished by smell, and fixed ones by the taste; perhaps because the thick mucous cuticle spread over the tongue, intercepts the action of the more subtile salts, which easily affect the softer and less covered nerves of the nostrils. The action of smells is strong, but of short continuance; because particles in a very minute state are applied to naked nerves in the immediate vicinity of the brain. Hence the deleterious and also the refreshing action of odours, by which people are resuscitated from faintings, &c. Hence the violent sneezing excited by acrid particles, the evacuation of the bowels by the smell of purgatives, and the power of antipathies.

SMELT'ING, in metallurgy, the fusion or melting of the ores of metals, in order to separate the metalline part from the earthy, stony, and other parts. The art of fusing the ores after roasting, is the principal and most important of metallurgic operations.

SMOKE, the visible vapour or exhalation that is expelled from a substance while burning; or the rarefied, but undecomposed part of a combustible; always proportioned in quantity to the incombustible matter within a substance, or to the matter with which oxygen does not readily combine. The word *smoke* is particularly applied to the volatile vapour expelled from coal, wood, vegetable matter, &c.; that which exhales from metallic substances being more generally called *fume*.

SMOKE-JACK, a machine consisting of an arrangement of wheels put in motion by the smoke and air, which ascend the chimney with force sufficient to turn a spit.

SMUG'GLING, the offence of importing goods without paying the duties imposed by law. While such enormous duties are imposed upon many foreign productions, all the vigilance of coast guards and revenue cutters must fail in putting a stop to the practice of smuggling. The temptation is evidently too strong for those who have engaged in it, to discontinue the practice; —nay, who is there that does not, directly or indirectly, encourage it? Smuggling owes its existence to oppressive duties, in many cases amounting to absolute prohibition; and although a large "preventive" force is kept in constant operation, at an incredible expense, no one who is at all acquainted with the commercial transactions of the metropolis, or who has witnessed the alacrity with which the smuggler is assisted by the peasantry on the coasts (particularly of Kent and Sussex), can wonder that he so often continues to elude the vigilance of the revenue officers, or that he dares to defy the pains and penalties of the custom laws.

SMUT, in husbandry, a disease in corn, when the grains, instead of being filled with flour, contain foul black powder.

SNAIL, a genus of insects, the *Limax* of Linnæus. They are sometimes without shells, and called *slugs*; and sometimes provided with shells composed of carbonate of lime, combined with coagulated albumen, secreted by the skin of the insect, the mouth of the shell being extended by layers of the substance to the margin. The eyes of snails are in their horns, which they draw in at pleasure. All the land *testacea* (shell animals) appear to have the power of becoming torpid at pleasure, and independent of any alterations of temperature. Thus, snails, if placed in a box at Midsummer, will attach themselves to its sides, and remain in this dormant state for several years. Even in their natural haunts, they are often found in this state during the summer season, when there is a continued drought. With the first shower, however, they recover, and move about again.

SNAKE *(anguis)*, in zoology, the common and general name of serpents; but, in England, generally applied to those which are oviparous. [See SERPENTS.]—To the account there given, we shall merely add the following observations relative to the singular use of the ribs of snakes in assisting progressive motion. "Sir Everard Home

THREE OR MORE PERSONS ASSEMBLED TO ASSIST IN THE ILLEGAL LANDING OF GOODS, ARE BY LAW DEEMED GUILTY OF FELONY.

was led to this discovery of the aid afforded by the ribs, to the whole tribe of snakes, in the progressive motion of those animals, by the following circumstances. A snake of unusual size, brought to London to be exhibited, was shown to Sir Joseph Bankes; the animal was lively, and moved along the carpet briskly; while it was doing so, Sir Joseph thought he saw the ribs move forward in succession, like the ribs of a caterpillar. The fact was readily established, and Sir Everard felt the ribs with his fingers, as they were brought forward: when a hand was laid flat under the snake, the ends of the ribs were distinctly felt upon the palm, as the animal passed over it. This was an interesting discovery, as it tended to demonstrate a new species of progressive motion, and one widely differing from those already known."——It is confidently stated in the *Oriental Herald*, and there appears to be no reason to doubt the fact, that the snakes which the Indian jugglers handle with impunity, are drugged with opium, which renders them quiet and harmless; and that the effects of the drug will not wear off for a fortnight or three weeks.

SNA'KEROOT *(Aristolochia serpentaria)*, in botany, a species of birth-wort, growing in North America. Its medicinal virtues are very considerable, and its general action is heating and stimulant.

SNA'KE'S-HEAD IRIS *(Iris tuberosa)*, in botany, a plant with a lily-shaped flower, of one leaf, shaped like an iris.

SNA'KEWEED, in botany, a plant of the genus *Polygonum*: bistort.

SNA'KEWOOD, the smaller branches of the *Strychnos colubrina*, a tree growing in the isle of Timor and other parts of the East, having a bitter taste, and supposed to be a certain remedy for the bite of the hooded serpent.

SNATCH' BLOCK, in ships, a great block or pulley, having a shiver cut through one of its cheeks, for the ready receiving of any rope. It is chiefly used for heavy purchases, where a warp or hawser is brought to the capstan.

SNIPE *(Scolopax gallinago)*, in ornithology, a bird that frequents the banks of rivers and the borders of fens, distinguished by the length of its bill.

SNOW, in meteorology, a congelation of vapour formed in the middle region of the air, when the temperature of the atmosphere sinks below the freezing point of water. A cloud of vapours being condensed into drops, those drops immediately descend, but, meeting with a freezing air as they fall, each is frozen into an icicle, shooting itself forth into several points. Continuing their descent, they pass through some partial streams of warmer air, or in their continual waftage to and fro, coming into frequent contact with each other, they are, by their mutual attrition, a little thawed. In their farther progress they entangle, or form themselves into clusters or flakes, and thus alight upon the earth. Upon examining the flakes, they are found to be chiefly composed of stars of six points, though these are intermixed with various other irregular figures, which are chiefly fragments of the regular ones. Others also, according to the hypothesis above laid down, seem to have been formed and frozen again into irregular clusters; so that the whole body of snow appears an infinite mass of icicles irregularly figured. The rarity or lightness of a flake of snow, which is composed of solid ice, is owing to the great extent of its surface in proportion to the quantity of its materials. There cannot be finer subjects for the microscope than the crystals of water of which snow and hoar-frost are composed. Their variety is endless, but the principal forms are stars of lamellar, spicular, or pyramidal crystals, from one-third to one-thirty-fifth of an inch in diameter.—Mr. Scoresby, in his account of the arctic regions, figures ninety-six varieties of these snow crystals. The colouring matter of the famous *red snow*, brought from the arctic regions by captains Ross and Parry, has been described by some observers as a true vegetable, belonging to the order *Algæ*. It grows upon limestone rocks, tufts of moss, dead leaves, and even on the bare soil. Other writers refer it to animalcular origin; and Mr. T. Nicholson, who visited Sowallick Point in 1821, describes the red colour of the snow he found there to be imparted by a substance lying on the surface. This substance was scattered in small masses, somewhat resembling powdered cochineal, surrounded by a lighter shade, which was produced by the colouring matter being partly dissolved and diffused by the deliquescent snow. Mr. Nicholson was further convinced that the above substance was the excrement of the little auk, myriads of which were flying about the spot.——*Snow-water* has been found, by chemical analysis, to contain more oxygen than rain or river water—a fact which accounts for its superior activity in causing iron to rust, &c.

SNUFF, pulverized tobacco, variously prepared, scented, and distinguished by a multitude of names; and applied to the nostrils of such as are fond of inhaling the titillating mixture.

SOAP, a composition of caustic fixed alkaline salt, and oil or other grease. It is sometimes hard and dry, sometimes soft and liquid; much used in washing, and other purposes, as well in the arts and manufactures, as in domestic purposes. Soap, in this country, is manufactured principally from tallow and other fat, and the alkali employed is either barilla or pearl-ash, or a mixture of the two.

SOAP'STONE, in mineralogy, a species of magnesian earth; *steatite* [which see.]

SOAP'WORT, in botany, a plant of the genus *Saponaria*.

SOBRI'ETY, a word expressive not only of habitual temperance with regard to intoxicating liquors, but also of an habitual freedom from enthusiasm or inordinate passion; as, the *sobriety* of age, a period when calmness and rational views are expected to take the place of an overheated imagination.

SOC'AGE, in law, a tenure of lands by

or for certain inferior services of husbandry to be performed to the lord of the fee; a tenure distinct from chivalry or knight's service, in which the render was uncertain.

SOCI'ETY, in its most enlarged sense, signifies the whole race or family of man; as, "the true and natural foundations of *society*, are the wants and fears of individuals." In a narrower sense, it signifies, persons living in the same neighbourhood, who frequently meet in company. It is also a name given to any association of persons uniting together, and co-operating to effect some particular object, as the societies or academies for promoting the cause of literature: benevolent societies, for purposes of public charity; missionary societies, for sending missionaries abroad; and various others. In society, a man not only finds more leisure, but better opportunities of applying his talents with success. The *social principle*, in fact, is of such an expansive nature, that it cannot be confined within the circuit of a family, of friends, or a neighbourhood: it spreads into wider systems, and draws men into larger communities and commonwealths; since it is in these only that the more sublime powers of our nature attain the highest improvement and perfection of which they are capable.

SO'CII, among the Romans, were such states as were in alliance with the commonwealth of Rome. In the time of Polybius, all Italy was subject to the Romans; yet no state or people in it had been reduced into the form of a province, but retained in general their own laws and governors, and were termed *socii*, or confederates. The *socii* received no consideration for their service, but a distribution of corn. The *auxilia* differed from the *socii*, as being borrowed at a certain pay from foreign princes and states. The name of *socii* in time ceased; all the natives of Italy being accounted Romans, and honoured with the *jus civitatis*.

SOCK (*soccus*), the shoe of the ancient actors in comedy. Hence the word is used for comedy, and opposed to *buskin* or tragedy; as, "I have no talents either for the *sock* or *buskin*."

SOC'LE, in architecture, a flat square member under the basis of pedestals of vases and statues, serving as a foot or stand.

SOC'OTRINE AL'OES, a fine kind of aloes from Socotra, an isle in the Indian ocean.

SOCRAT'IC PHILOS'OPHY, the doctrines and opinions, with regard to morality and religion, maintained and taught by Socrates. [See PHILOSOPHY.]

SO'DA, a mineral alkali, obtained from several sources, but principally from plants growing on the sea-coast. It is sometimes found in a native state, as in the lakes in Egypt, which, being dried by the heat of the sun, leave beds of soda, or natron, as it is there called. Soda is, however, for the most part, procured from the *salsola soda*, a plant which grows among the cliffs on the coast. Like potash, it is procured by lixiviation from the ashes of burnt plants, but only from those which grow on the sea shores. Soda very much resembles potash, but it is rather more fusible; and when it comes into the air, it crumbles into powder instead of liquefying, as potash does. In order to obtain it in a state of purity, the subcarbonate of soda must be treated like the potash of commerce, with lime and ardent spirit.

SO'DALITE, a mineral of a bluish green colour, found crystalized or in masses. It obtains its name from the large portion of mineral alkali which enters into its composition.

SO'DA-WATER, a very weak solution of soda in water supersaturated with carbonic acid. Late discoveries have shown that the carbonic acid gas exists in a liquid state in soda-water; when, therefore, it is hastily swallowed, it robs the stomach of a certain portion of heat, as it passes from a liquid into a gaseous state. It will therefore cool as well as distend that organ. It should, however, be borne in mind, that the use of carbonate of soda, either in water or malt liquor, is, in most constitutions, of great utility, but more especially to those persons who are of a bilious temperament.

SO'DIUM, the metallic base of soda. It is white, opaque, and when examined under a film of naptha, has the lustre and general appearance of silver. It is exceedingly malleable, and is much softer than any of the common metallic substances. It conducts electricity and heat in a similar manner to the basis of potassa; and small particles of it inflame by the Galvanic spark, and burn with bright explosions. When sodium is exposed to the atmosphere, it immediately tarnishes, and by degrees becomes covered with a white crust, which deliquesces much more slowly than the substance that forms on the basis of potassa. This crust is pure soda. Sodium combines with the metals; in the quantity of one-fortieth, it renders mercury a fixed solid of the colour of silver, and the combination is attended with a considerable degree of heat. It makes an alloy with tin, without changing its colour, and it acts upon gold and lead when heated. In its state of alloy it is converted into soda by exposure to the air, or by the action of water, which it decomposes with the evolution of hydrogen.

SO'FA, an elegant long seat, with a stuffed bottom and a covering of chintz, hair-cloth, silk, or other material. The sofa of the Orientals is a kind of alcove raised half a foot above the floor where visitors of distinction are received. It is also a seat by the side of the room covered with a carpet.

SOF'FIT, in architecture, any timber ceiling formed of cross beams, the compartments of which are enriched with sculpture, painting, or gilding. Also, the under side or face of an architrave, enriched with compartments of roses.

SOIL, the earthy materials in which plants grow; consisting of compounds of silica, lime, alumina, magnesia, oxyde of

TO PROCURE PURE SODA WE MUST BOIL A SOLUTION OF THE PURE CARBONATE WITH HALF ITS WEIGHT OF QUICKLIME.

iron, and various acid and alkaline combinations, with the remains of animal and vegetable matter, the variety being necessary to healthy vegetation.

SOKE, in law, a term which anciently had various significations, viz. 1. The liberty or privilege of tenants excused from customary burdens and impositions. 2. The power of administering justice. 3. The precinct in which the chief lord exercised his *soc*, or liberty of keeping court within his own jurisdiction. 4. A stipulated payment or rent to the lord for using his land, with such liberty and privilege as made the tenant the soke-man or freeholder.——*Soke-men*, those who held by no servile tenure, but paid their rent as a soke, or sign of freedom.——*Soke-reeve*, the rent-collector in the lord's soke.

SO'LAN-GOOSE (*Pelecanus bassanus*), an aquatic fowl found on the coasts of Great Britain and Ireland. It is nearly of the size of the domestic goose.

SOLA'NUM, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. Plants of this kind are mostly perennials, shrubs, or trees; but the *Solanum tuberosum* or potato, the *aureum mala* or tomato, and some others, are annuals. *Solanum* is also the name of a species of the *Atropa*, *Datura*, &c.

SOLA'RIUM, in antiquity, a place on the tops of houses exposed to the sun, where the Romans used to take air and exercise.

SO'LAR SYSTEM, that system of astronomy which is founded on the hypothesis that the sun is the immovable centre of the universe, round which all the other planets revolve at different distances, and in different spaces of time.——Sun-dials show the *apparent* solar time; watches, and other time-pieces in common use, only the *mean* solar time. The difference between the two is called *equation of time*. [See ASTRONOMY, EARTH, SUN, PLANETS, MOON, &c.]

SO'LDAN (pron. *soudan*), a title formerly given to a general who commanded the caliph's army: the epithet was afterwards applied to a governor of Egypt.

SOL'DERING (pron. *sod'dering*), among mechanics, the uniting together two pieces of the same metal, or of two different metals, by the fusion and application of some metallic composition on the extremities of the metals to be joined. In the operation of soldering, the surfaces of the metal intended to be joined are scraped and rendered very clean; they are then brought close up to each other, and, to secure them, they are held by one workman while another lays a little resin or borax about the joint.——*Solders* are made of gold, silver, copper, tin, bismuth, and lead; usually observing, that in the composition there be some of the metal that is to be soldered mixed with some higher and finer metals.

SO'LDIER, a man enrolled for military service, or whose occupation is military. It is generally applied to a private, or one in the ranks; but it is also a proper appellation for an officer of any grade who possesses valour, skill, and experience.

SOLDU'RII, in antiquity, a kind of military clients or retainers to the great men in Gaul, who bound themselves to bear all the good or ill fortune of their patrons.

SOLE, in ichthyology, a marine fish of the genus *Pleuronectes*. Soles abound on the British coast, afford considerable employment to the fishermen, and are much esteemed as an article of food.——The bottom of the foot; also of a shoe.

SOL'ECISM, in grammar, incongruity of language, or a gross deviation from the rules of grammar, either in respect of declension, conjugation, or syntax.——In a general sense, any unfitness or impropriety.

SO'LENITE, petrified solen, a genus of shells.

SOLI"CITOR, in law, a person authorized and employed to prosecute the suits of others in courts of equity.——*Solicitor-general*, in British polity, an officer of the crown. Till the 13th of Charles II. he, with the attorney-general, had a right, on special occasions, to sit in the house of lords.

SOL'ID, in philosophy, a body whose parts are so connected together, as not to give way or slip from each other upon the smallest impression; in which sense *solid* stands opposite to *fluid*.——Geometricians define a solid to be the third species of magnitude, or that which has three dimensions, *viz.* length, breadth, and thickness or depth.—*Solids* are commonly divided into *regular* and *irregular*. The *regular* solids are those terminated by regular and equal planes, and are only five in number, *viz.* the tetrahedron, which consists of four equal triangles; the cube, or hexahedron, of six equal squares; the octahedron, of eight equal triangles; the dodecahedron, of twelve; and the icosahedron, of twenty equal triangles. The *irregular* solids are almost infinite, comprehending all such as do not come under the definition of regular solids; as the sphere, cylinder, cone, parallelogram, prism, parallelopiped, &c.——In anatomy and medical science, the bones, flesh, and vessels of animal bodies are called *solids*, in distinction from the blood, chyle, and other fluids.——*Solid square*, in military language, is a square body of troops; a body in which the ranks and files are equal.

SOLIDA'GO, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. Plants of this genus are distinguished by the name of the golden-rod, on account of their yellow flowers and long spikes.

SOLIFID'IAN, in theology, one who maintains that faith alone, without works, is necessary to justification.

SO'LO, in music, a passage, or perfect piece in which a single voice or instrument performs without accompaniment. Peculiar freedom, ease, distinctness, and power of execution, are required to perform the solo with correctness, taste, and feeling.

SOLOMON'S SEAL, in botany, the *Convallaria* of Linnæus, a perennial.

SOL'STICE, in astronomy, the time when the sun is in one of the solstitial points; that is, when it is at the greatest distance from the equator, which is 23½ degrees, and

when, to the people of the higher latitudes, it appears to stand still, not changing its place in the degrees of the zodiac. The solstitial points in an artificial globe, are those in which the ecliptic, or path of the sun, intersects the tropics.——*Summer solstice*, the 21st of June, when the sun enters the tropic of Cancer, in its progress southward, and gives the longest day. *Winter solstice*, the 21st of December, when the sun enters the tropic of Capricorn in its progress northward, and gives the shortest day.

SOLV'ENT in chemistry, any menstruum or corrosive liquor which will dissolve substances.

SOLU'TION, the intimate mixture or perfect union of solid bodies with fluids, so as seemingly to form one homogeneous liquor. The word is applied both to the *act* of combination, and to the *result* of the process: thus common salt disappears in water, that is, its solution takes place, and the liquid obtained is called a *solution* of salt in water. Solution is the result of attraction or affinity between the fluid and the solid.——In algebra and geometry, *solution* signifies the answering of a question, or the resolving of a problem.——In surgery, the term *solution of continuity* denotes the separation of connected substances or parts, applied to a fracture, laceration, &c.

SO'MATIST, one who denies the existence, and consequently the agency, of spiritual substances.

SOMATOL'OGY, the doctrine of bodies or material substances.

SOM'MITE, in mineralogy, nepheline; a mineral which occurs in small crystals.

SOMNAM'BULISM, the phenomenon of sleep-walking, during which the sensitive and willing powers govern the muscles, while the reasoning or reflecting organs are asleep; but in dreaming it is the contrary. The phenomena attendant on sleep-walking are very singular, the person affected performing many voluntary actions, implying a certain degree of perception of external objects. Some instances which have come to our own knowledge appear incredible enough; but our experience falls infinitely short of the marvellous accounts we have met with in print. It is asserted of some somnambulists, that they have been known to undress and take a cold bath; of others, that they saddled and bridled their horses, and afterwards rode to a considerable distance; and of others again, whose habits perhaps were more sedentary, who wrote letters, made verses, &c.; while in most cases they quietly returned to their beds, and awoke at their usual hour utterly unconscious of their previous vagaries. "In the case of the somnambuli," says Dugald Stewart, "the mind retains its power over the limbs, but possesses no influence over its own thoughts, and scarcely any over the body, excepting those particular members of it which are employed in walking."

SON, in its primary sense, is the male issue of a parent, father or mother. In a more extended sense, as often used in the Scriptures, sons include descendants in general; as, we are all *sons of Adam*. Also a native or inhabitant of a country; as, the *sons* of Britain.

SONA'TA, in music, a piece or composition of music, wholly executed by instruments; and which, with regard to the several kinds of instruments, is what the cantata is with respect to vocal performances.

SON'CHUS, in botany, a genus of plants, class 19 *Syngenesia*, order 1 *Polygamia æqualis*. The species are perennials.

SONG, in general, that which is sung or uttered with musical modulations of the voice, whether of the human voice or that of a bird. The *songs* of a country are characteristic of its manners.

SON'NET, a short poem, which, according to its Italian model, consists of fourteen lines; and divides itself into two parts, the first of eight, and the latter of six lines. Authors who compose sonnets are called *sonneteers*.

SONOM'ETER, an instrument for measuring sounds or the intervals of sounds.

SOOT, a black substance formed by combustion, or disengaged from fuel in the process of combustion, rising in fine particles and adhering to the sides of the chimney or pipe conveying the smoke. *Soot* consists of oil, carbon, and other substances. The soot of burnt pine forms lampblack.

SOOTH'SAYING, the foretelling of future events by persons without divine aid or authority, and thus distinguished from *prophecy* by inspiration.

SO'PHI, a title given to the sultan of Persia, as grand master of the order of the *Sophis*, originally a religious body of the Mohammedan church in that empire.

SOPH'ISM, a subtilty in reasoning, the arguments not being logically supported, or in which the inferences are not justly deduced from the premises.

SOPH'ISTS, a name at first given to philosophers, and those who were remarkable for their wisdom: it was afterwards applied to rhetoricians, and lastly to such as spent their time in verbal niceties, logical conundrums, sententious quibbles, and philosophical enigmas. The following, called the *Pseudomenos*, for example, was a famous problem amongst the ancient *sophists*: "When a man says, *I lie*, does he *lie*, or does he *not lie*? If he lies, he speaks truth; and if he speaks the truth, he lies."

SOPHISTICA'TION, the adulterating, counterfeiting, or debasing the purity of something by a foreign admixture.

SOPORIF'IC, in medicine, any drug, plant, &c. that has the quality of inducing sleep.

SOPRA'NO, in music, one of the intermediate portions of the scale, which is a species of the treble, suited to the female voice.

SOR'BATE, in chemistry, a salt formed by the union of the sorbic acid with some base.

SOR'BIC ACID, in chemistry, the acid procured from the fruit of the service-tree.

SORBONNE, the name of a college originally instituted for the education of secu-

lar clergymen at the university of Paris, so called after Robert of Sorbon, in Champagne, a theologian of Paris, who founded it during the reign of St. Louis, about 1250, and endowed it with an income which was subsequently much increased. This institution, the teachers in which were always doctors and professors of theology, acquired so much fame, that its name was extended to the whole theological faculty of the university of Paris.

SOR'BUS, in botany, a genus of plants, class 12 *Icosandria*, order 3 *Trigynia*. The principal species are the mountain ash, the mountain service, the roan, and the service tree.

SOR'CERY, magic, or divination by the supposed assistance of evil spirits, or the power of commanding evil spirits.

SORD'AWALITE, a black or grayish green mineral, so named from Sordawald, in Wibourg.

SOR'DES, in medicine, foul matter. Also, dregs of any kind.

SOR'EL, a term used by sportsmen for a male fallow deer of three years old.

SOR'EX, in zoology, a genus of animals, class *Mammalia*, order *Feræ*. Animals of this kind, which are distinguished in English by the name of the shrew, resemble the mole in the head and the mouse in other parts.

SORI'TES, in logic, an imperfect syllogism, or a species of reasoning, in which a great number of propositions are so linked together, that the predicate of the one becomes continually the subject of the next in succession, till a conclusion is formed by bringing together the subject of the first proposition and the predicate of the last.

SOR'REL, in botany, a plant of the genus *Rumex*, so named from its acid taste. The *wood-sorrel* is of the genus *Oxalis*. The *Indian red* and *Indian white sorrels* are of the genus *Hibiscus*.

SORTIE', in military language, the issuing of a body of troops from a besieged place to attack the besiegers; a sally.

SOUL, in metaphysics, the intellectual principle, immaterial and immortal. Various have been the opinions of philosophers concerning the substance of the human soul; but, as lord Bacon observes, the doctrine concerning the rational soul of man must be deduced from revelation; for as its substance, in its creation, was not formed out of the mass of heaven and earth, but immediately inspired by God; and as the laws of the heavenly bodies, together with those of our earth, make the subject of philosophy, so no knowledge of the substance of the rational soul can be had from philosophy.——By the word *soul*, we also denote the spirit, essence, or chief part; as, charity is the *soul* of all the virtues. Also the animating principle, or that which gives life and energy to the whole; as, an able commander is the *soul* of an army.

SOUND, an effect or impression on the ear supposed to be occasioned by the tremulous motion of the air acting on that organ, caused by a collision of bodies, or other means. The distance to which sounds may be heard, will be proportional to the magnitude or intensity of the stroke made on the tremulous body emitting the sound; for the greater that stroke is, the greater will be the agitation of the parts of the sonorous body, and the greater will be the force with which they will strike the particles of air. Hence, the greater will be the stroke at any given distance on the drum of the ear, and, consequently, the greater will be the distance at which the agitation of the air will be sensible.——*Sound*, in geography, any great inlet of the sea between two capes or headlands where there is no passage through, as Plymouth Sound, or that part of the Baltic called *the Sound*.

SOUND'ING, in navigation, the operation of trying the depth of the water, and the quality of the bottom, by a line with a plummet at the end.——*Soundings*, a name given to the specimen of the ground: a piece of tallow being stuck upon the base of the deep-sea lead, brings up distinguishing marks from the bottom, as sand, shells, &c., which adhere to it. This is carefully marked in the log book.

SOUTH, one of the cardinal points. Strictly, *south* is the horizontal point in the meridian of a place, on the right hand of a person standing with his face towards the east. But the word is applied to any point in the meridian, between the horizon and the zenith.

SOUTH'ERNWOOD, in botany, the *Artemisia abrotanum*, a plant agreeing in many parts with wormwood, though of a different species.

SOUTH SEA BUBBLE, a term given to a commercial "scheme" in 1720, which, for a time, produced a kind of national delirium in England. A company for trading to the South Seas, which was entitled the "South Sea Company," had been sanctioned by government, with the specious pretence of discharging the national debt, by reducing all the funds into one. Blunt, the projector, had taken the hint of his plan from Law's celebrated Mississippi scheme, which, in the preceding year had, in France, entailed ruin upon many thousand families of that kingdom. In the project of Law there was something substantial. It promised an exclusive trade to Louisiana; though the design was defeated by the frantic eagerness of the people. But the South Sea scheme was buoyed up by nothing but the folly and rapaciousness of individuals, which became so blind and extravagant, that Blunt was able to impose upon the whole nation, and make tools of the other directors, to serve his own purpose and that of a few associates. When this projector found that the South Sea stock did not rise according to his expectation, he circulated a report that Gibraltar and Port Mahon would be exchanged for some places in Peru; by which means the English trade to the South Sea would be protected and enlarged. This rumour, diffused by emissaries, acted like a contagion. In five days the directors opened their books for a

subscription of 1,000,000*l.* at the rate of 300*l.* for every 100*l.* capital. Persons of all ranks crowded to the house in such a manner, that the first subscription exceeded 2,000,000*l.* of original stock. In a few days this stock advanced to 340*l.*; and the subscriptions were sold for double the price of the first payment. In a little time the stock reached 1000*l.*, and the whole nation was infected with the spirit of stock-jobbing to an incredible extent. The infatuation prevailed till the 8th of September, when the stock began to fall, and some of the adventurers awoke from their delirium. On the 29th of the same month, the stock had sunk to 150*l.*: several eminent goldsmiths and bankers, who had lent great sums upon it, were obliged to stop payment and abscond; and the ebb of this portentous tide was so violent that it carried every thing in its way, and an infinite number of families were overwhelmed with ruin. Public credit sustained a terrible shock; the nation was thrown into a ferment; and nothing was heard but the ravings of grief, disappointment, and despair. Some principal members of the ministry were deeply concerned in these fraudulent transactions; and though they used all their influence with the Bank to assist them in supporting the credit of the South Sea Company, and actually obtained from that corporation a large sum, the bubble burst; and a committee of the House of Commons, to whom the subject had been referred, declared they had discovered a train of the deepest "villany and fraud that hell ever contrived to ruin a nation." Suffice it to add, that some of the "directors" were expelled the house; others taken into custody; and the estates of several confiscated by act of parliament, after a certain allowance was deducted for each, according to their conduct and circumstances.——In this commercial country, rife with all kinds of speculations, and among whose inhabitants there are swarms of greedy adventurers, ever on the watch to entrap the credulous and unwary,—where new companies—"capital one million"—burst upon the sight of the astonished multitude, in all the splendour of rank and influence,—as their veritable heralds, the *prospectuses*, testify,—we think the foregoing sketch of one great national bubble cannot be improperly introduced. But we lament to say, that periodical bubbles appear to be indigenous to Britain. Let us hope they may not become perpetual. Yet how many there are who view our present position with a fearful recollection of the year 1825—that memorable period of widespread misery, so delicately termed *the panic*—

When merchants, with cargoes of trouble,
Ran foul of the banks, and broke brokers;
When "mining shares" proved worthless rubble,
And quidnuncs no longer were jokers;
When bills and bad debts were made double,
When "paper" was mere chaff and stubble,
When credit itself was a bubble,
And the nation—a nation of croakers!

SOV'EREIGN, a supreme ruler, or one who possesses the highest authority without control. A king or queen regnant.—— An English gold coin, value twenty shillings.

SOY, a dark coloured sauce, prepared in China and Japan from the seeds of a sort of bean. It is eaten with fish, &c. This is an article which is believed to be very extensively counterfeited.

SPACE, in the abstract, mere extension. In relation to bodies, space is the interval between any two or more objects. The universe of space, and probably of matter and phenomena, in an indefinite variety of forms, are necessarily infinite in extent; for the notion of bound and definite size is the mere result of our experimental knowledge, and relative considerations.——There is another mode of space, the idea of which we get from the fleeting and perpetually perishing parts of succession, which we call *duration*.—— *Space*, in geometry, denotes the area of any figure, or that which fills the interval or distance between the lines that terminate it.——*Space*, in mechanics, the line which a movable body, considered as a point, is conceived to describe by its motion.——*Space* (among printers), a slip of wood or metal for making a space between words or lines.

SPADI'CEOUS, in botany, an epithet for a kind of aggregate flower, having a receptacle common to many florets, within a spathe, as in palms, &c.

SPA'DIX, in botany, the receptacle in palms and some other plants, proceeding from a spathe.

SPA'HI, or SPA'HEE, one of the Turkish cavalry.

SPAN, a measure taken from the space between the end of the thumb and the tip of the little finger, when extended. The span is estimated at three hands' breadths, or nine inches.——In seamen's language, a small line or cord, the middle of which is attached to a stay.

SPAN'DREL, the space between the curve of an arch and the right lines inclosing it.

SPAN'IEL, a dog used in sports of the field, remarkable for his sagacity and obedience. It is generally white, with large brown, liver-coloured, or black spots, of irregular shape and size, and long pendulous ears. There are several varieties, the largest and most beautiful of which is the Alpine or St. Bernard's breed; and the smallest (*canis brevipilis*), usually called king Charles's breed, is used as a lap-dog.

SPAR, in natural history, a class of fossils, not inflammable nor soluble in water; pellucid, colourless, and emulating the appearance of crystal, but wanting its distinguishing characters.——Any sort of earth which breaks easily into cubical or laminated fragments with polished surfaces.—— A name given to the round pieces of timber used for the yards and topmasts of ships.

SPAR'ROW, in ornithology, a bird so nearly allied to the finches, that they are classed by Linnæus under the generic name of *Fringilla*. It is a mischievous, cunning

WOODPECKERS TAP THE TREES WITH THEIR BILL, TO DISTURB THE INSECTS CONCEALED IN THE BARK, SO AS TO SEIZE THEM WHEN THEY APPEAR.

DURING THE TIME A PAIR OF SPARROWS ARE FEEDING THEIR YOUNG, THEY WILL DESTROY ABOUT FOUR THOUSAND CATERPILLARS WEEKLY.

bird, very destructive in corn-fields, and in the roofs of houses where it builds.

SPARSE, in botany, an epithet sometimes applied to leaves, peduncles, &c., denoting that they are not opposite, alternate, nor in any apparent regular order.

SPASM, in medicine, an involuntary contraction of the muscular fibres, or that state of the contraction of muscles, which is not spontaneously disposed to alternate with relaxation. When the contractions alternate with relaxation, they are called convulsions.

SPATHA'CEOUS, in botany, an epithet for a plant having a calyx like a sheath.

SPATHE, in botany, the calyx of a spadix opening or bursting longitudinally, in form of a sheath. It is also applied to the calyx of some flowers which have no spadix, as the narcissus, crocus, iris, &c.

SPATH'IC IRON, a mineral of a foliated structure, and a yellowish or brownish colour.

SPAT'ULA, an apothecary's instrument for spreading plasters, &c.

SPAT'ULATE, in botany, an epithet for a leaf shaped like a spatula or a battledore, being roundish with a long, narrow, linear base.

SPAV'IN, in the menage, a disease in horses, being a swelling or excrescence in the inside of a horse's hough, at first like gristle, but afterwards hard and bony.

SPA WATER, springs strongly impregnated with minerals in the earth, as nitre, sulphur, iron, copperas, &c., and useful, with exercise and regimen, in curing diseases.——*Spa*, which is a celebrated watering-place, is about seven leagues from Aix-la-Chapelle. It has been long famous for its medicinal springs, which are mentioned by Pliny, and are six or seven in number.

SPEAK'ER, in the parliamentary sense, an officer who acts as chairman during a sitting.——The *Speaker of the House of Commons* is a member of the house, elected by a majority of votes to act as chairman or president, in putting questions, reading bills, keeping order, and carrying into execution the resolutions of the house. The Speaker is not to deliver his sentiments upon any question; but it is his duty to interrupt a member whose language is indecorous, or who wanders from the subject of debate: he may also stop a debate, to remind the house of any standing order, or established mode of proceeding, which he sees about to be violated. He, however, submits everything to the decision of the house. If the number of votes on the two sides of a question be equal, he may decide it by his own; but otherwise he cannot vote. When the house resolves itself into a committee, the chair is filled by a temporary chairman, and the Speaker is then capable of addressing the house on any subject, like a private member.——The *Speaker of the House of Lords* is an officer who is usually the high-chancellor, or in his absence, the chief-justice.

SPE'CIALTY, in law, a special contract or bond; the evidence of a debt by deed or instrument under seal, thereby differing from what is called *simple contract*.

SPE'CIE, in commerce, gold or silver coin, in distinction from paper money.

SPE'CIES, in natural history, a collection of organized beings derived from one common parentage, characterized by one peculiar form, liable to vary from the influence of circumstances only within certain narrow limits. Different races from the same parents are called *varieties*.——In botany, all the plants which spring from the same seed, or which resemble each other in certain characters or invariable forms.——The word species is also used in a looser sense; as, "there is a *species* of low humour which is sometimes called wit;" "a *species* of wool resembling the Merino," &c.

SPECIF'IC, an epithet designating the peculiar properties of a thing, which constitute its species, and distinguish it from another thing. Thus we say, the *specific* form or nature of an animal or plant; the *specific* distinction between virtue and vice; or the *specific* difference between an acid and an alkali.—— In medicine, a remedy which either certainly cures, or is less fallible than others; as, a *specific* for the gout.

SPECIFICA'TION, the act of specifying, or designation of particulars; as, the *specification* necessary to be given in taking out a patent; or, the *specification* of a charge against a naval or military officer.

SPECIFIC GRAVITY. [See GRAVITY.]

SPE'CIMEN, a sample or small portion of anything, intended to exhibit the kind and quality of the whole, or of something not exhibited.

SPEC'TACLE, something that is exhibited to view as extraordinary or deserving especial notice; as, the combats of gladiators in ancient Rome were spectacles at once wonderful and brutal; or, the manager has this season produced a splendid *spectacle*.——In the plural, *spectacles*, glasses to assist the sight.

SPECTRE, a phantom or apparition created, when supposed to be seen, by the mind, through its own fears or guilty recollections.——In conchology, a species of *Voluta*, marked with reddish broad bands.

SPECTRUM, in optics, a luminous spot formed by a ray of light on a white surface when admitted through a small hole. Also, an image of something seen, continuing after the eyes are closed or turned away. This is called an *ocular spectrum*.

SPECULA'TION, in commerce, the act or practice of buying articles of merchandize, or any purchasable commodity whatever, in expectation of a rise of price and of selling the same at a considerable advance. In this it is distinguished from regular trade, in which the profit expected is the difference between the retail and wholesale prices, or the difference of price in the place where the goods are purchased, and the place to which they are to be carried for market. *Speculation* on a large scale, upon the principle of monopolizing, or that kind of speculation which consists in the pur-

chase and sale of shares in public companies, as well as "dabbling" in the stocks, and a variety of other hazardous transactions which might be named, are different species of gambling, and are often no less ruinous.

SPEC'ULUM, in optics, any polished body impervious to the rays of light, such as polished metals, looking-glasses, &c.——*Speculum*, in surgery, an instrument for dilating and keeping open a wound, in order to examine it attentively.

SPEECH, the faculty of expressing thoughts by words or articulate sounds. [See LANGUAGE.]

SPELT, in botany, a species of grain of the genus *Triticum*; called also German wheat.

SPEL'TER, in mineralogy, common zinc, which contains a portion of lead, copper, iron, manganese, plumbago, and a little arsenic.

SPERM, or SPERMACE'TI, the unctuous matter contained in the head of a certain species of whale, the *Physeter* or *Cachalot*. It is found also in other parts of the body; and from this substance fine oil is extracted, and candles of excellent quality are manufactured.

SPHA'CELUS, in medicine and surgery, gangrene, or mortification of the flesh of a living animal. Also, *caries* or a decay of the bone. Hence, to *sphacelate*, to mortify; and *sphacelation*, the process of becoming gangrenous.

SPHENE, a mineral substance, found amorphous and in crystals. It is composed of nearly equal parts of oxyde of titanium, silex, and lime. Its colours are various, inclining either to gray, yellow, brown, or different shades of green.

SPHERE, in geometry, a solid body contained under one uniform round surface, such as would be formed by the revolution of a circle about its diameter, as an axis. Its surface is consequently in every part equally distant from a point called its centre.——*Sphere*, in astronomy, the concave orb or expanse which invests our globe, and in which the heavenly bodies appear to be fixed, at an equal distance from the eye.——*Sphere*, in geography, a certain artificial disposition of circles transferred to the surface of the earth from the surface of the sphere of the heavens on which they are primarily supposed to be drawn. [See GLOBE, ARMILLARY SPHERE, &c.]——A *right sphere*, that aspect of the heavens in which the circles of daily motion of the heavenly bodies are perpendicular to the horizon, as a person at the equator would view it.——A *parallel sphere*, that in which the circles of daily motion are parallel to the horizon. Thus, a spectator at either of the poles would view a *parallel* sphere.——An *oblique sphere*, that in which the circles of daily motion are oblique to the horizon; as is the case to a person situated at any point between the equator and the pole.——The word *sphere* has also another signification of wide extent, and in continual use; as, "every man has his particular *sphere* of action;" "events of this kind have repeatedly fallen within the *sphere* of my observation;" "I have no acquaintance with persons in his *sphere* of life," &c.

SPHER'ICS, the doctrine of the sphere, particularly of the several circles described on its surface, with the method of projecting the same on a plane.——*Spherical geometry*, that branch of geometry which treats of spherical magnitudes.——*Spherical trigonometry*, that branch of trigonometry by which we learn to compute the sides and angles of spherical triangles.——*Spherical triangle*, a triangle formed by the mutual intersection of three great circles of the sphere.

SPHEROID', a body or figure approaching to a sphere, but not perfectly spherical. A spheroid is either *oblate* or *prolate*. The earth is found to be an *oblate spheroid*, that is, flatted at the poles; whereas an opinion had been formed by some astronomers, that it was a prolate or oblong sphere.

SPHEROSID'ERITE, in mineralogy, a substance found in the basaltic compact lava of Steinheim; called also glass lava or hyatite.

SPHER'ULE, a little globe or spherical body. Thus when mercury is poured upon a plane, it divides itself into a great number of minute *spherules*.

SPHER'ULITE, in mineralogy, a variety of obsidian or pearl-stone, found in rounded grains.

SPHINC'TER, in anatomy, the name of several muscles, whose office is to shut or close the aperture round which they are placed.

SPHINX, in antiquity, an emblematical figure, composed of the head and breasts of a woman, the wings of a bird, the legs and claws of a lion, and the body of a dog; and said to have been the Egyptian symbol of theology.——Also, a fabulous monster of Thebes. According to mythological history, its father was Typhon the gigantic son of Terra, and it was sent by Juno to afflict the Thebans, which it did by proposing enigmatical questions to persons, whom it killed if they could not expound them. At length, Œdipus having explained its famous riddle on man, it precipitated itself from a rock, and was dashed to pieces. This riddle was as follows: "What creature is that which goes in the morning upon four; at noon, upon two; and in the evening, upon three legs." Œdipus answered, "It is man; who, in his infancy, crawls upon all four, walks afterwards on two, till old age brings him to his staff, which constitutes three legs."——*Sphinx*, in entomology, a genus of insects of the order *Lepidoptera*. There are said to be two hundred species of this genus. They fly abroad in the morning and evening, are very slow on the wing, and often make a humming kind of noise: they extract the nectary of flowers with the tongue: the larva has sixteen feet, and is pretty active.

SPHRAG'ID, a species of ochreous clay which falls to pieces in water with the emission of many bubbles; called also *earth of Lemnos*.

THE MOST USUAL FORM OF A SPIDER'S WEB IS THAT OF A WHEEL, HAVING ITS RADII OR SPOKES CROSSED BY CONCENTRIC CIRCLES.

SPI'DER, in entomology, the common name of insects of the genus *Aranea*, which, though harmless, and even useful, are, by their figure and habits, calculated to excite in the unthinking mind a sensation bordering on disgust.—Under the word "ARANEA" will be found some interesting particulars relative to the formation of that wonderful specimen of insect mechanism, the spider's web; and the following observations, by a foreign author, serve to point out its utility to man. "The spider is a more unerring indicator of impending changes in the atmosphere than the best barometer. These insects have two different ways of weaving their webs, by which we can know what weather we are to have. When the weather inclines to turn rainy or windy, they make the principal threads, which are the foundation, as it were, of their whole web, very short, and rather thick; whereas they spin them much longer, when fine and warm weather is to be expected. Thence it appears clearly, that the spiders have not only a near, but also a distant presentiment of the changes which are preparing in the air. The barometer foretels the state of the weather with certainty only for about twenty-four hours; whereas we may be sure that the weather will be fine twelve or fourteen days, when the spider makes the principal threads of its web long. How fortunate is it therefore, that provident nature, among other gifts, has also bestowed upon the cultivator of the country such a cheap instrument, upon the sensibility and infallibility of which with regard to the impending changes in the atmosphere, he can rely! The barometers are frequently very fallible guides, particularly when they point to settled fair; whereas the work of the spider never fails to give the most certain information. This insect, which is one of the most economical of animals, does not go to work, nor expend such a great length of threads which it draws out of its body, before the most perfect equilibrium of all the constituent parts of the air indicates with certainty that this great expenditure will not be made in vain. Let the weather be ever so bad, we may conclude with certainty that it will not last long, and soon change for settled fair, when we see the spider repair the damages which his web has received."

SPI'DERWORT, in botany, a plant of the genus *Anthericum*.

SPIKE (*spica*), in botany, a species of inflorescence, in which sessile flowers are alternate on a common simple peduncle, as in wheat and rye, lavender, &c. The word *spike* is also applied to the heads of wheat, barley, rye, and maize.——In gunnery, *to spike a gun*, is to fill up the touchhole of a piece of ordnance by driving a nail forcibly into it, to render it unserviceable.

SPI'KENARD, in botany, a species of nard, a plant growing in India, which produces, even with the ground, and sometimes partly below it, a fruit in the form of a spike or ear, of about the length and thickness of a finger, covered with hairs of a reddish colour. It has a strong smell, and sharp bitterish taste, was formerly made into a highly-valued ointment, and is at present considered as a stomachic medicine. The ancients mention another *nardus*, growing near the Ganges, of a poisonous smell. The spikenard is brought from the East Indies, and therefore sometimes called *nardus Indica*.

SPI'NAL MAR'ROW *(medulla spinalis)*, in anatomy, a continuation of the *medulla oblongata*, and as the *spine* is an assemblage or series of bones of the back, which support the rest of the body, so the spinal marrow is the origin of most of the nerves of the trunk of the body.

SPINE *(spina dorsi)*, in anatomy, the bony column reaching from the head down the back to the *os sacrum*; being the series or assemblage of vertebræ which sustain the rest of the body, contain the spinal marrow, and to which the ribs are connected. It is composed of twenty-four bones, called *vertebræ*.

SPINE, in botany, a thorn, or sharp process from the woody part of a plant. It differs from a *prickle*, which proceeds from the bark. A *spine* sometimes terminates a branch or a leaf, and sometimes is axillary, growing at the angle formed by the branch or leaf with the stem. The wild apple, the sloe, and many others, are armed with *spines* or *thorns*; the gooseberry-bush, the bramble, and the rose have *prickles*. Yet no one talks of roses and their prickles; neither is it necessary, except when treating on botanical science. It would, in fact, be absurd to confine ourselves to the use of scientific technology at all times and in all places, especially when custom has authorized the use of more familiar, or (as is sometimes the case) more elegant terms. This remark may be considered digressive: we make it merely for the sake of hinting, that by a precise adherence to technological phraseology on ordinary occasions, more pedantry is apt to be displayed than good sense.

SPI'NELLANE, a rare mineral, occurring in small crystaline masses and in minute crystals.

SPIN'ET, a musical stringed instrument, played on by two ranges of keys, the foremost range being in the order of the diatonic scale; and the other range set backward, in the order of the artificial notes or semitones.

SPIN'NING, in manufactures, the act or art of reducing silk, flax, hemp, wool, hair, or other materials, into thread. It is either performed on the wheel with a distaff and spindle, or with machines constructed on the principle of saving manual labour, and performing a great quantity of work. Among the Greeks and Romans, spinning was the chief employment of the women: the rites of marriage directed their attention to it; and the distaff and fleece were not only the emblems, but the objects of the most important domestic duties of a wife. The machinery employed in weaving, though perhaps rude in its con-

THE SPINNING MULE IS SO NAMED, FROM ITS BEING A COMPOUND OF THE HAND-JENNY AND THE WATER-FRAME.

struction, was, in principle, similar to that still in use; and the process of fulling and preparing the cloth, seems to have resembled the modern practice in every particular point, except that of shearing the nap, with which the ancients do not appear to have been acquainted. In early records we do not, however, read of cloth being measured, which appears to have arisen from a custom of weaving no more cloth in one piece than was sufficient to form a single dress. Muslins are to this day manufactured by the primitive loom in India, probably without alteration of the form in use during the earliest ages of its invention. The manufacture of flexible stuffs by means of machinery, operating on a large scale, is an invention of the last century, and has given birth to some of the most elaborate combinations of mechanism, and constitutes an important source of our national wealth. —By a statement which has lately appeared, the estimated number of looms propelled by water and steam power, in the United Kingdom, is 58,000. The average produce, taking it at twenty-two square yards a day, makes 1,254,000, or 1,741 yards a minute; weekly, 7,524,000; monthly, 31,300,000; yearly, 376,200,000. Allowing six yards to each person for yearly consumption, it will supply 62,700,000, and will cover 62,700 acres of ground. In length it would extend 213,750 miles, or reach across the Atlantic Ocean seventy-one times.

SPIN'NING JENNY, a machine used to spin cotton, &c. by which many spindles are turned by a horizontal wheel.

SPI'NOZISM, the doctrines or principles of Spinoza, a native of Amsterdam, consisting of a heterogeneous mixture of atheism and pantheism.

SPIN'STER, in law, the common title by which an unmarried woman, without rank or distinction, is designated.

SPIN'THERE, a mineral of a greenish-gray colour.

SPI'RAL, in geometry, a curve line of the circular kind, which in its progress recedes from a point within, called its centre. The fusee or spring of a watch gives a good idea of this curve.——*Spiral*, in application to architecture and sculpture, is a curve that ascends winding about a cone or spire, like a screw, so that all the points of it continually approach the axis.

SPIRE, in architecture, a steeple that continually diminishes as it ascends, whether conically or pyramidally. The highest spire in England is that of Salisbury, 410 feet high, or seven feet higher than the cross of St. Paul's, and double the height of the Monument, near London bridge.—— The term *spire* was used by the ancients for the base of a column, and sometimes for the astragal or torus.——In botany, a stalk or blade of grass.

SPIR'IT, in metaphysics, an incorporeal being or intelligence.——Also, excitement of mind, animation, or whatever has power or energy; the quality of any substance which manifests life and activity; disposition of mind excited and directed to a particular object, &c.——*Holy Spirit*, the third person in the Trinity.

SPIR'ITS, any strong, pungent, and stimulating liquor; or, in other words, the evaporation of fermented liquors, after the carbonic acid gas has been expelled from the vegetable solution in water, leaving some water, an excess of hydrogen, and part behind, which after distillation produces spirits of wine, brandy, rum, whiskey, &c. The specific gravity of the purest spirit, or liquid hydrogen, is 825, water being 1000, and, of course, when excited by the access of flame, it combines with the oxygen of the air, and burns rapidly, forming water, and carbonic acid gas. It never freezes.

SPIR'ITUAL, mental; intellectual; immaterial. Also, relating to sacred things, or ecclesiastical.—— *Spiritually minded*, having the affections refined and elevated above sensual objects, and placed on God and his law.——*Spiritual court*, a court held by a bishop or other ecclesiastic.

SPLANCHNOL'OGY, in medical science, a treatise or description of the viscera; also the doctrine of diseases of the internal parts of the body.

SPLEEN, in anatomy, a soft, spongy substance, situated on the left side, between the eleventh and twelfth false ribs, and covered with a firm membrane, arising from the peritoneum. It is of an oval form, about one-fifth smaller than the liver; hollow towards the stomach, and convex towards the diaphragm and ribs: however, it is often irregular, and has many fissures. The use of the spleen has been much controverted; but the most probable opinion seems to be, that it serves to render the blood more fluid, out of which the bile is to be afterwards secreted; and that by this means obstructions, which must otherwise be frequent, are prevented, and the secretion of the bile promoted.——In figurative language we use the word spleen for ill-humour; as, to vent one's *spleen*.

SPLENT, in the veterinary art, a callous substance or insensible swelling on the shank-bone of a horse.

SPLICE, a term in common use with seamen, &c., signifying to separate the strands of the two ends of a rope, and unite them by a particular manner of interweaving them; or to unite the end of a rope to any part of another by a like interweaving of the strands.

SPLIN'TER, in a general sense, a thin piece of wood split off.——In surgery, a thin piece of wood or other substance, used to hold or confine a broken bone when set.——*Splintery*, in mineralogy, an epithet for any substance which discovers scales arising from splits or fissures parallel to the line of fracture.

SPOD'UMENE, a mineral occurring in laminated masses, easily divisible into prisms with rhomboidal bases; the lateral faces shining and pearly, the cross fracture uneven and splintery. Before the blowpipe it exfoliates into little yellowish scales.

SPON'DEE, in the Latin and Greek pro-

THE EFFECTS OF SPIRITS ARE SUDDEN, VIOLENT, AND TRANSITORY; THOSE OF WINE ARE GRADUAL, GENTLE, AND LASTING.

SPECIMENS OF COLOURED FLAMES, IN CONSEQUENCE OF ITS ADMIXTURE WITH DIFFERENT SUBSTANCES.

sody, a poetic foot of two long syllables.——*Spondaic*, pertaining to a spondee.

SPONGE, or SPUNGE. Much difference of opinion exists among naturalists, respecting the place which the sponges ought to occupy; some referring them to the animal kingdom, while others contend for their vegetable nature. It was formerly thought to be a marine fungus, adhering to rocks, and other bodies beneath the water, and occasionally separated and thrown on the shores. But it has been subsequently classed as a genus of the *Vermes Zoophyta;* the animal being fixed, torpid, and of various forms, composed either of reticulate fibres, or of masses of small spines, interwoven together, and clothed with a gelatinous porous flesh, by which it absorbs or rejects water at pleasure. Sponge is usually brought from the Mediterranean, and more especially from a particular island of that sea, called Nicaria, where the qualifications of a good diver for this plant are held in the highest estimation; but a finer sort is collected at Constantinople, and thence imported into Britain. The coarsest kinds come from the coasts of Barbary.——*Pyrotechnical sponge*, or *tinder*, is made of mushrooms or fungi, growing on old oaks, ash, fir, &c. which are boiled in water, dried and beaten, then put into a strong lye prepared with saltpetre, and again dried in an oven.

SPON'SOR, one who binds himself to answer for another, and is responsible for his default. Hence, *sponsor*, in baptism, is a surety for the moral education of the child baptized.

SPONTA'NEOUS, an epithet for things that act by their own impulse, or without any apparent external agency; as, the spontaneous combustion of vegetable substances, which, when highly dried, and closely heaped, will burst into a flame.——*Spontaneous combustion of human bodies.* The instances which have occurred of this awful termination of existence, have been confined to the consumers of spirituous liquors, and are supposed to have been occasioned by an ignition of the phosphoric acid, which forms a large constituent of the bones, and many of the secretions of the human body; a supposition supported by the facts, that phosphuretted hydrogen inflames, when disengaged, and comes in contact with the atmosphere; and that, where incipient putrefaction occurs in dead bodies, phosphorus is evolved among the gaseous product, in union with hydrogen.——Numerous instances of this mortal catastrophe are recorded. M. Julia de Fontenelle, in a paper read to the Academy of Sciences at Paris, describes fifteen cases, from the detail of which the following general results are obtained:—1. Generally those who have died by spontaneous combustion, have indulged in excess of spirituous liquors. 2. The combustion is almost always general, but in some cases it may be partial. 3. It is rare amongst men; and the women have in almost every case been aged. 4. The body and the viscera have always been burnt, whilst the feet, hands, and crown of the head, have almost always been saved. 5. Although it is known by experience that a very large quantity of wood is requisite to burn a corpse, this particular kind of incineration occurs without inflaming the most combustible substances of an ordinary kind near it. 6. It has not been shown, in any case, that the presence of fire is necessary to commence this kind of combustion. 7. Water, instead of extinguishing the flame, appears to give it more activity; and when the flame has disappeared, the combustion proceeds within. 8. They occur more frequently in winter than in summer. 9. The cure of general combustions has never been effected; but sometimes that of partial ones. 10. Those seized with combustion experience a sensation of strong internal heat. 11. It is suddenly developed, and consumes the body in a few hours. 12. Those parts not reached by the fire, are affected by gangrene. 13. A putrid degeneration ensues, which causes gangrene. 14. The residue of this combustion is composed of greasy cinders, and an unctuous matter.—Professor Jameson observes, in substance, upon this interesting question: we are of opinion that, in some subjects, and chiefly in women, there exists a general condition of the body, which, conjoined with the extreme debility occasioned by age, a life of little activity, and the abuse of spirituous liquors, may give rise to a spontaneous combustion. But we are far from considering as the material cause of this combustion, either alcohol, or hydrogen, or a superabundance of fat. If alcohol plays a prominent part in this combustion, it is by contributing to its production; that is to say, it produces, along with the other causes mentioned, the degeneration of which we have spoken, which gives rise to new products of a highly combustible nature, the reaction of which determines the combustion of the body."

SPOOL, an implement used by weavers, being a piece of cane or reed, or a hollow cylinder of wood with a ridge at each end.

SPOON'BILL, in ornithology, a fowl of the grallic order, and genus *Platatea*. It is named from the shape of its bill, which is somewhat like a spoon or spatula. Its plumage is delicately white and beautiful.

SPOON'-DRIFT, a sea term for a showery sprinkling of salt water, swept from the surface in a tempest.

SPOON'FUL, as much as a spoon will contain. [It will not be supposed that this word is inserted here, merely in order to give a definition which every child is perfectly well acquainted with. Our motive is, to protest against those ridiculous innovations in language which originate either in a misapprehension of the simplest rules of grammar, or in the pride of half taught pedantry; but which the "many" are silly enough to adopt in compliance with a prevalent custom, however ill-founded. The word *spoonful* (which designates a certain quantity, or as much as will fill a spoon), is *a noun, whose plural is regularly formed* by adding *s;* thus "a spoonful," "two or more *spoonfuls;*" and it is a viola-

tion of grammar to write it otherwise. Yet we have *teaspoonsful* of this, and *tablespoonsful* of that, in every page of nearly all our "domestic" guides: nay, even the apothecaries (who surely *ought* to know better) *now* almost invariably direct us to take "two or three *spoonsful*," as the case may be. These remarks are of course applicable to all words similarly formed, as *pailsful, handsful, mouthsful, bellysful!* from pailful, handful, &c.]

SPORAD'IC, in medicine, an epithet for such diseases as occur in particular persons and places, in distinction from *epidemic*, which affect persons generally or in great numbers. The term *sporadic* implies, neither general nor contagious.

SPOTS, in astronomy, dark places observed on the sun, moon, and planets. The spots on the sun vary; while those on the moon and planets remain the same, and by their motion make the rotation of those bodies manifest. [See SUN.]

SPRING, the season of the year when increasing solar heat restores the energy of vegetation. It comprehends the months of March, April, and May, in the middle latitudes north of the equator.——*Spring*, in mechanics, denotes a thin piece of tempered steel, or other elastic substance; which, being wound up, serves to put several machines in motion by its elasticity: such is the spring of a clock, watch, &c.——*Spring*, in natural history, a fountain of water, or issue of water from the earth, or the basin of water at the place of its issue. From *springs* proceed rivulets, and rivulets united form rivers. Rain penetrates the ground, and oozes into and through certain strata, but, being obstructed by other strata, forms cavities and subterraneous reservoirs at various depths, many of which, when full, force their way out of the ground, and constitute springs.—The most simple manner of accounting for springs and their attendant phenomena, is that of comparing the action of the water beneath the surface of the earth to that of a portion of the same water contained in a convenient vessel, and in the midst of which a little heap or island of the same earth is placed. In making such an experiment, it will be found that the water, obedient to the laws of attraction, will rise through the pores of the earth. In nature we have only farther to suppose reservoirs into which this filtrated water is collected, and from which the surcharge flows.

SPRIT'-SAIL, in vessels, a sail attached to a yard which hangs under the bowsprit. A small boom or pole which crosses the sail of a boat diagonally from the mast to the upper sternmost corner is termed a *sprit*.

SPRUCE, in botany, the *Pinus nigra*, or spruce-fir. Also, a fluid extracted from it by decoction. There are several varieties of the *spruce*, as the black, the white, and the red spruce, all growing in North America. The black spruce is a very useful and beautiful tree, often 70 or 80 feet in height.

SPRUCE-BEER, a cheap and wholesome liquor, made of treacle or molasses, and tinctured with the essence of *spruce*, well boiled in water and fermented.

SPURGE, in botany, a plant of the genus *Euphorbia*. —— *Spurge-laurel*, the *Daphne laureola*, a shrub.——*Spurge-olive*, the Mezereon, a shrub of the genus *Daphne*.

SQUAD'RON, in the art of war, a division or body of troops, which, among the ancients, was always square; whence its name. ——A *squadron of ships*, a division or part of a fleet, employed on a particular expedition, and commanded by a vice or rear-admiral, or a commodore.

SQUA'LUS, in ichthyology, a genus of fishes of the order *cartilaginei*, of many species. The fishes of this genus are never found in rivers or lakes, but inhabit only the sea, and carry terror and destruction wherever they appear. They are extremely rapacious of animal substances, and seize whatever they find with the most violent avidity. [See SHARK.]

SQUARE, in geometry, a quadrilateral figure, whose angles are right angles, and sides equal.——*Square*, in arithmetic, the product of any number multiplied by itself; also the squares of lineal measures, as a square foot, a square yard.——Among mechanics, an instrument for squaring their work or reducing it into a square.——In military affairs, a body of soldiers formed into a square.——*Square-root*, in arithmetic, a number which, multiplied in itself, produces the square number: thus, 2 is the square-root of 4.——*Square-rigged*, is said of a vessel when her principal sails are extended by yards suspended by the middle, and not by stays, gaffs, booms, and lateen yards. Thus a ship and a brig are square-rigged vessels.——*Square-sail*, a sail extended to a yard suspended by the middle.

SQUAR'ROUS, in botany, surfy, jagged, or full of scales. A *squarrous calyx* consists of scales very widely divaricating; a *squarrous leaf* is divided into shreds or jags, raised above the plane of the leaf, and not parallel to it.

SQUILL, in botany, a plant of the genus *Scilla*. It has a large, acrid, bulbous root, like an onion, which is used in medicine. ——A crustaceous animal, or shell-fish, of the genus *Cancer*.——An insect so called from its resemblance to a crab, having a long body covered with a crust, the head broad and squat.

SQUIR'REL, in zoology, a small and very nimble animal of the genus *Sciurus*, order of *Glires*, and class *Mammalia*. There are several species; as the gray, the red, and the black squirrel. They have two cutting teeth in each jaw, four toes on the fore feet, and five on the hind feet. They subsist on nuts, of which they lay up a store for winter, in hollow trees or in the earth. They frequent woody places, and leap from branch to branch, among the trees, with wonderful agility.

STAC'TE, in chemistry, a fatty, resinous, and very odoriferous kind of gum, of the nature of liquid myrrh. It is very valuable when pure; but it is said we have none but

THE CELEBRATED BOILING FOUNTAIN IN ICELAND, THE GREAT GEYSER, FREQUENTLY EJECTS ITS CONTENTS TO THE HEIGHT OF 100 FEET.

what is adulterated, and what is so called is liquid storax.

STA'DIUM, in antiquity, a race-course. Vitruvius describes it as an open space 125 geometrical paces long, terminated at the two extremes with two posts, called by the Romans *carcer* and *meta*. Along the *stadium* was built a kind of amphitheatre, where the spectators were placed to see the feats of the athletæ. There were also other *stadia*, covered over with colonnades and porticos, serving for the same exercises in bad weather.

STAFF, in military affairs, an establishment of officers in various departments, attached to an army, or to the commander of an army. The staff includes officers not of the line, as adjutants, quarter-masters, chaplain, surgeon, &c. The staff is the medium of communication from the commander-in-chief to every department of an army.——An ensign of authority; a badge of office; as, a constable's *staff*. Also a pole erected in a ship to hoist and display a flag, called a flag-*staff*.

STAG, the male of the deer kind; an animal of great power, sagacity, and fleetness, often hunted by dogs and men, when it runs from 20 to 50 miles before it is ensnared and taken.

STAGE, in the drama, the place of action and representation, included between the pit and the scenes, and answering to the *proscenium*, or *pulpitum*, of the ancients. The word *stage* also often implies the whole dramatic art in composition and performance.——A floor or platform of any kind elevated above the ground or common surface, as for an exhibition to public view; as, a *stage* for a mountebank; a *stage* erected for public speakers.——A place of rest on a journey; as, how far is it to the next *stage*? or the distance between two places of rest on a road; as, it is a twelve-mile *stage*. Hence the word *stage-coach*.

STA''GYRITE, an appellation given to Aristotle from Stagira, a town in Macedonia, the place of his birth.

STALAC'TITES, the drippings of water impregnated with carbonate of lime; or siliceous particles, which adhere, drop by drop, from the roof to the floor of a cave, forming pillars and parts like icicles, above and below.

STALACTIT'IC, in the form of stalactites, or pendent substances like icicles.

STALAG'MITE, a deposit of earthy or calcareous matter, formed by drops on the floors of caverns.

STALK, in botany, the stem of an herbaceous plant, which rises immediately from the root, and supports the leaves, &c.

STALK'ING, a term used in sporting, and applied to a kind of screen, and sometimes to a horse, to hide the sportsman while he gets within shot. Hence the word *stalking-horse* is used for a pretence; as "hypocrisy is the devil's *stalking-horse*, under an affectation of simplicity and religion."

STALL, the seat of a dignified clergyman, in a cathedral; also a partition in a stable; and an open shop in a market or fair.——*Stallage*, the right of erecting stalls in fairs; or rent paid for a stall.

STA'MEN, in botany, one of the principal parts of fructification in plants, on which Linnæus's sexual system is founded. [See BOTANY.]

STAM'INA, whatever constitutes the principal strength or support of any thing; as, the *stamina* of a person's constitution; the simple original parts of an animal body, which existed in the embryo.

STAMIN'EOUS, in botany, an epithet for those flowers of plants which have no petals or flower-leaves, but consist only of a number of stamens and pistils placed in a cup.

STAMP, a mark set upon things chargeable with duty to government, as evidence that the duty is paid; as, the stamp on a newspaper, the stamp on a bond or indenture, &c.——Any instrument for making impressions on other bodies.——A character of reputation, good or bad, fixed on any thing; as, the Scriptures bear the *stamp* of a divine origin; this person bears on his unblushing face the *stamp* of roguery——In metallurgy, a kind of pestle raised by a water wheel, for beating ores to powder.

STAN'DARD, in commerce, the original weight, measure, or coin, committed to the keeping of a magistrate, or deposited in some public place, to regulate, adjust, and try weights used by particular persons in traffic. The standards of weights and measures in England, are appointed, by Magna Charta, to be kept in the Exchequer, by a special officer, called the clerk or comptroller of the market. The standard of gold coin is 22 parts of fine gold and 2 of alloy, in the pound troy. The standard of silver is 11 oz. 2 dwts. of pure silver and 18 dwts. of alloy of copper. Whether gold or silver be above or below the standard is found by assaying, and the hydrostatical balance.——*Standard*, in military affairs, a flag or banner borne as a signal for the forming of troops into a body.——*Standards*, in horticulture, a term used to distinguish such fruit-trees as are not trained against walls or grow in espaliers.——In shipbuilding, an inverted knee placed upon the deck instead of beneath it with its vertical branch turned upward from that which lies horizontally.——In botany, the upper petal or banner of a papilionaceous corolla.——That which is established as a rule or model, by the authority of respectable opinions, or by general consent. Thus, Addison's writings furnish a good *standard* of pure, chaste, and elegant English composition.

STAN'NARIES, the mines and works from which tin is dug and purified. Those of this country are found chiefly in Devonshire and Cornwall.

STAN'ZA, in poetry, a number of lines or verses connected with each other; being a portion of a poem containing every variation of measure in that poem. Stanzas are said to have been first used in Italian poetry.

STA'PLE, a settled mart or emporium

POTATO STARCH GOES MUCH FARTHER THAN WHEAT STARCH, A LESS QUANTITY BEING SUFFICIENT TO FORM A PASTE EQUALLY THICK.

for the sale of certain articles. The king's staple, as it was called, was formerly established in certain ports or towns in England, and certain goods could not be exported, without being first brought to these places to be rated and charged with the duty imposed on them. The principal commodities on which customs were levied, were wool, skins, and leather, which being called "*staple* commodities," the term in time was applied to the principal commodities produced by a country either for exportation or home consumption.——The word *staple* is also used to signify the thread or pile of wool, cotton, or flax; as, cotton is of a short, long, or fine *staple*.

STAR, a general name for any one of the heavenly bodies that appears at night, or when its light is not obscured by clouds or lost in the brighter effulgence of the sun; but more particularly for what are otherwise denominated *fixed stars*, as distinguished from planets, comets, satellites, &c. The principal points regarding the fixed stars, into which astronomy inquires, are—their distance; magnitude; number; nature; and motion. The magnitudes of the stars appear to be very different; but this variation is attributed to that of their distances. Those not reduced to classes, are called nebulous stars; being such as only appear faintly, in clusters, resembling little lucid *nebulæ*, or clouds. The number of the fixed stars cannot be reckoned. Dr. Herschel was enabled to count hundreds in the field of his telescope, and the milky way is an assemblage of an almost infinite number of stars, indistinct to the naked eye; but Herschel counted ten thousand in a square degree, the whole forming a vast cluster of stars in the space, of which our sun is one, and of which all the single stars visible are also parts; and it appears that space is filled with similar clusters or wonderful shoals of stars, which, to the unassisted eye, appear as luminous points, but viewed through telescopes display innumerable stars at such distances as infinitely outstep conception, and consequently leave no means for calculation. The ancient astrologers, for the sake of discriminating them, covered the visible sphere with imaginary figures, or constellations, in the parts and limbs of which the stars were classed, and then the names of the figures were given to them. The nature of the fixed stars is argued from several premises. It is demonstrated that they are larger than the earth; that they are farther distant from the earth than the most distant of the planets; and being more distant, and yet more luminous than Saturn, it should follow that they shine with their own light: hence it is concluded, that the fixed stars are *suns*. It is farther supposed that they are not smaller than the sun of our own system, and, like that, are the centres round which planets revolve; that is, that there are opaque bodies upon which their light shines. [See Planet.]——*Star*, in heraldry, a charge frequently borne on the shield, which differs only from the mullet, in not being pierced.——*Star* is also a badge of honour, worn by the knights of the garter, &c.——In pyrotechny, a composition of combustible matter, which, exploding high in the air, exhibits the appearance of a real star.

STAR'-APPLE (genus *Chrysophyllum*), in botany, a globular or olive-shaped fleshy fruit, inclosing a stone of the same shape. It is grown in the warm climates of America, and is eaten by way of dessert.

STAR'BOARD, the right hand of a ship or boat, when looking towards the head or stem.

STAR'-CHAMBER, formerly, a court of criminal jurisdiction at Westminster, so called from its roof being ornamented with gilt stars. This court took upon itself to decide upon those cases of offence with regard to which the law was silent; and was in criminal matters what the exchequer is in civil. It passed judgment without the intervention of a jury. It differed from all other judiciary courts in this, that the latter were governed only by the common law, or immemorial custom, and acts of parliament; whereas the former often admitted for law the proclamations of the king in council. This court was abolished by stat. 16 Chas. I.

STAR'-FISH. [See Asterias.]

STAR'-STONE, a kind of extraneous fossil, consisting of regular joints, each of which is of a radiated figure; *asteria*.

STAR'-WORT, in botany, a plant of the genus *Aster*, and another of the genus *Iridax*. The *yellow star-wort* is of the genus *Inula*.

STARCH, the fecula of flour, a glutinous substance, made by steeping wheat, or the refuse of wheat, in water; the floury viscous sediment being afterwards cleansed, and dried in an oven, or by the sun. The component parts of starch are oxygen, hydrogen, and carbon. Starch exists in a great number of vegetable substances, but chiefly in the roots and seeds, and particularly of those which are employed as food.

STAT'ICS, that branch of mathematics which treats of bodies *at rest*. Dynamics treats of bodies *in motion*. The science of statics comprehends,—1. All the doctrines of the excitement and propagation of pressure, through the parts of solid bodies, by which the energies of machines are produced. 2. Every circumstance which influences the stability of heavy bodies; the investigation and properties of the centre of gravity, the theory of the construction of arches, vaults, and domes; the attitudes of animals, &c. 3. The strength of materials, and the principles of construction, in every part of a machine, edifice, or structure of any kind. 4. The whole doctrine of the pressure of fluids, whether liquid or aeriform.

STATIONARY, in astronomy, an epithet applied to the appearance of a planet, when it seems to remain on the same point of the zodiac for several days. As the earth, from whence we behold the motions of the planets, is out of the centres of their orbits,

STARCH, FROM WHATEVER SOURCE OBTAINED, IS A WHITE SOFT POWDER, WHICH FEELS CRISPY, AND IS DESTITUTE OF TASTE AND SMELL.

the planets appear to proceed irregularly; being sometimes seen to go forwards, that is from west to east; sometimes to go backwards, or from east to west, which is called their retrograde motion. Now between these two states there must be an intermediate one in which the planet neither appears to go backwards nor forwards, but to stand still: this always happens when the line that joins the earth's and planet's centre is constantly directed to the same point in the heavens.

STATISTICS, a term of somewhat modern date, adopted to express a more comprehensive view of the various particulars constituting the general and political strength and resources of a country than was usually embraced by writers on political arithmetic. The principal objects of the science of *statistics* are—the extent and population of a state; the occupation of the different classes of its inhabitants; the progress of agriculture, of manufactures, and of internal and foreign trade; the income and wealth of the inhabitants, and the proportion drawn from them for the public service by taxation; their health and longevity; the condition of the poor; the state of schools and other public institutions of utility; with every other subject, the knowledge of which may be useful in ascertaining the moral condition and political strength of a country, its commerce, arts, &c.

STAT'UE, the figure of a man or other object, formed of marble or stone, &c., or carved in wood, and cast in plaster or in different kinds of metal. This branch of sculpture is termed *statuary*.

STAT'UTES, acts of parliament made by the three estates of the realm, and which are either public or private. *Statutes* are distinguished from *common law*. The latter owes its binding force to the principles of justice, to long use, and the consent of a nation. The former owe their binding force to a positive command or declaration of the supreme power. The courts of Westminster must take cognizance of the public statutes without their being specially pleaded, but not so of private statutes.

STAU'ROLITE, or STAU'ROTIDE, (called by the French *harmotone*), a mineral crystalized in prisms, either single or intersecting each other at right angles. Its colour is white or gray, reddish or brown; and it is distinguished from the garnet by its form and infusibility.

STAVE, in music, the five horizontal and parallel lines on which the notes of tunes are written or printed.——A thin narrow piece of timber, of which casks are made.

STAY, in the rigging of a ship, a large strong rope employed to support the mast, by being extended from its upper end to the stern of the ship. The *stays* are distinguished by the names of the *fore-stay*, *main-stay*, and *mizzen-stay*.——To *be in stays*, is to lie with the head to the wind, and the sails so arranged as to check her progress.——To *miss stays*, is to fail in the attempt to go about.——*Stay-sail*, any sail extended on a stay.——*Stay-tackle*, a large tackle attached to the main-stay by means of a pendant, and used to hoist heavy bodies.

STEAM, the vapour of water; or the component elements of water and heat, raised to a high degree of elasticity by the application of the latter to the former. When produced under the common atmospheric pressure, its elasticity is equivalent to the pressure of the atmosphere, and it is called *low steam*; but when heated in a confined state, its elastic force is considerably augmented, and it is then called *high steam*. It has been ascertained that the time required to convert a given quantity of water into steam is six times greater than that required to raise it from the freezing to the boiling point. Fluid, exposed in an open vessel to the action of fire, cannot, however great the heat applied, be made to indicate a higher temperature than that at the boiling point. Steam will be evolved in greater or less quantities, according to the degree of heat applied, but the temperature will continue the same as that of the water. When water, exposed to the pressure of the atmosphere, is heated to the temperature of 212°, globules of steam, composed of heat and water in a state of combination, are formed at the bottom of the vessel, and rising through the fluid, may be collected at its surface. In its perfect state it is transparent, and consequently invisible, but when it has been deprived of a part of its heat by coming in contact with cold air, it becomes of a cloudy appearance. By increasing the heat, the temperature of the water never rises above 212°, nor that of the steam which is generated; the only effect being a more copious production. It is a singular fact, that though low pressure steam will scald most dreadfully, yet high pressure steam will not; and if a thermometer be placed in it, we find the temperature greatly below that of boiling water. "When water," as Dr. Thomson remarks, in accounting for this phenomenon, "issues from the spout of a boiling tea-kettle, it is at first invisible, and it is not till it has advanced some distance in the air, that it begins to assume the appearance of a visible cloud. But condensed steam is visible the moment it issues from the pipe. The high pressure steam, supposing the elasticity double, occupies only half the space of low pressure steam. The moment it comes into the atmosphere its volume is doubled. This occasions a prodigious increase in the capacity for heat, and at the same time mixes it with the cold atmospheric air. These two circumstances sink its temperature so low that it is no longer capable of scalding."—A cubic inch of water, when converted into steam at a temperature of 212°, will occupy the space of a cubic foot, or rather more than 1700 cubic inches, this steam having an elastic force of one atmosphere, or being capable of exciting a pressure of 15lbs. upon the square inch. If the pressure of the atmosphere be diminished or taken away, the steam formed from the

same quantity of water will occupy a much greater space than one cubic foot, but its pressure will be diminished in a proportionate degree. On the other hand, when the water is made to boil under a greater pressure than that of the atmosphere, the steam formed will occupy a less space than one cubic foot, but will be possessed of a proportionately greater elastic force. Thus, suppose the pressure on the surface of the boiling water to be two atmospheres, or 30lbs. upon the square inch, then will the steam formed have a pressure of two atmospheres, but it will only occupy half a cubic foot. If it be allowed more space, it will expand and fill that space, but as it expands its pressure will be lessened. On the application of cold, steam instantly returns to the state of water, or, as it is termed, *condenses*, and thus forms a sudden vacuum. Upon this property, and upon its expansibility, depends its efficacy as a propeller of machinery; and it becomes a mechanical agent, at once the most powerful that can be conceived as well as the most manageable, as is seen in the vast and multiplied uses of that wonder-working engine, which, in a subsequent article, we have attempted to describe.

STEAM-ENGINE. The properties and effects of *steam* having been detailed above, our present object is to give a description of the *steam-engine*, with such an account of its rise, progress, and present state, as can be gleaned from the most authentic documents. Wonderful as are the powers of this mechanical contrivance; numerous as are the uses to which it is applied; and astounding as its influence must be on the state of society, whether considered as the great promoter of the peaceful arts, or in its probable destructive agency as a mighty implement of war, the steam-engine in itself, as a piece of mechanism, without regard to its various applications and adaptations, is simple and intelligible. It is, in fact, only a pump, in which the fluid is made to impel the piston, instead of being impelled by it, that is to say, in which the fluid acts as the *power*, instead of being the *resistance*. It may be described simply as a strong barrel or cylinder, with a closely-filled piston in it, which is driven up and down by steam, admitted alternately above and below from a suitable boiler; while the end of the piston-rod, at which the whole force may be considered as concentrated, is connected in any convenient way with the work that is to be performed. The power of the engine is of course proportioned to the size or area of the piston, on which the steam acts with a force, according to the density of from 15 to 100 or more pounds to each square inch. In some of the Cornish mines, there are cylinders and pistons of more than 90 inches in diameter, on which the pressure of the steam equals the efforts of 600 horses.—The first idea of the steam-engine is found in the writings of that celebrated projector, the marquis of Worcester, who, in the year 1663, published a small tract, entitled "A Century of Inventions," consisting of short heads, or notices of schemes, many of them obviously impracticable, which at various times had suggested themselves to his very fertile and warm imagination. No contemporary record exists to illustrate or verify his description of the contrivance which we presume to call a *steam-engine*, or to inform us where, and in what manner, it was carried into effect; though it is evident, from his account, that he had actually constructed and worked a machine that raised water by steam. His description of the method is short and obscure, but inclines us to think the force of his engine was derived solely from the *elasticity* of steam; and that the *condensation* of steam by cold was no part of his contrivance. This last, we believe, was the invention of captain Savary, who, in 1696, published an account of his machine, in a small tract entitled "The Miner's Friend," having erected several engines previous to that period. In these engines the alternate condensation and pressure of the steam took place on the same vessel into which the water was first raised, from a lower reservoir, by the pressure of the atmosphere, and then expelled into a higher one by the elastic force of strong steam. Steam, it must be observed, was thus employed merely to produce a vacuum, and to supply the strength that was applied, for a like effect, to the sucker or piston of an ordinary pump; and it was a great step to have discovered a method of bringing the air to act in this manner by the application of heat to water, without the assistance of mechanical force. The next essential improvement was made by Newcomen, for which he obtained a patent in 1705. It consisted in separating the parts of the engine in which the steam was to act from those in which the water was to be raised; the weight of the atmosphere being employed only for the purpose of pressure, and the steam for that of first displacing the air, and then forming a vacuum by condensation. Newcomen was thus enabled to dispense with the use of steam of great and dangerous elasticity, to work with moderate heats, and to remove at least some part of the causes of watchful and ineffectual condensation. To him we are indebted for the introduction of the steam cylinder and piston, and for their connection with the pump by means of the main lever, with its rods and chains: to which we might add several subordinate contrivances, which do great credit to his ingenuity. Still, however, the machine required the constant attendance of a man to open and shut the cocks at the proper intervals, for the alternate admission of steam and cold water; and although traditional report attributes the invention of the mechanism by which the engine was made to perform this work itself, to the ingenuity of an idle boy, it is well-known that the contrivance was first perfected by Mr. Henry Beighton, in 1717, who also improved the construction of several other parts of the engine. From this time, to the year 1764, there seems to have been no material im-

THE IDEA OF EMPLOYING STEAM AS A MOTIVE POWER, EVIDENTLY FIRST OCCURRED TO HERO OF ALEXANDRIA, ABOUT 40 B.C.

IN A BOOK BY VALTURIUS, PRINTED AT VERONA, IN 1472, A METHOD IS DESCRIBED OF PROPELLING VESSELS BY MEANS OF PADDLES OR WHEELS.

provement in the structure of the engine, which still continued to be known by the appellation of Newcomen's, or the atmospheric engine. The boilers, however, had been removed from under the cylinder in some of the larger engines, and the cylinder had been fixed down to a solid basis. Still the steam was condensed in the cylinder; the hot water was expelled by the steam, the piston was pressed down by the weight of the atmosphere, and kept tight by being covered with water. It was moreover considered as necessary that the injection cistern should be placed on high, in order that the water might enter with great force. It had been found by experience that the engine could not be loaded, with advantage, with more than seven pounds on each square inch of the piston, and the inferiority of that power to the known pressure of the atmosphere, was, without due consideration, imputed wholly to friction. The bulk of water, when converted into steam, was very erroneously computed; the quantity of fuel necessary to evaporate a given quantity of water was not even guessed at: whether the heat of steam is accurately measured by its temperament was unknown; and no good experiment had been made to determine the quantity of ejection water necessary for a cylinder of given dimensions. In a word, no man of science in this country had considered the subject since Desaguliers; and his writings, in many respects, tended more to mislead than instruct. Such was the state of matters, when, fortunately for science and the arts, Mr. James Watt, then a mathematical instrument-maker at Glasgow, undertook the repair of a model of a steam-engine belonging to the university. In the course of his trials with it he found the quantity of fuel and injection water it required much greater in proportion than they were said to be in large engines; and it soon occurred to him that this must be owing to the cylinder of this small model exposing a greater surface in proportion to its contents, than larger cylinders did. This he endeavoured to remedy by making his cylinders and pistons of substances which conducted heat slowly. He employed wood prepared on purpose, and resorted to other expedients without producing the desired effect in any remarkable degree. He found also, that all attempts to produce a greater degree of exhaustion, or a more perfect vacuum, occasioned a disproportionate expenditure of steam. In reflecting upon the causes of these phenomena, the recent discovery, that water boiled in an exhausted receiver at low degrees of heat (certainly not exceeding 100° of Fahrenheit, but probably, when the vacuum was perfect, much lower), occurred to him, and he immediately concluded that, to obtain any considerable degree of exhaustion, the cylinder and its contents must be cooled down to 100° at least; in which case, the reproduction of steam in the same cylinder must be accompanied with a great expense of heat, and consequently of fuel. He next endeavoured to ascertain the temperature at which water boils when placed under various pressures; and not having any apparatus at hand by which he could make his experiments under pressure less than that of the atmosphere, he began by trying the temperature of water boiling under great pressures; and by laying down a curve, of which the *abscissæ* represented the temperatures, and the *ordinates* the pressures, he found the law by which the two are connected, whether the pressure be increased or diminished. Observing, also, that there was a great error in Desagulier's calculation of the bulk of water when converted into steam, and that the experiment on which he founded his conclusion was in itself fallacious, he thought it essential to determine this point with more accuracy. By a very simple experiment with a Florence flask, which our limits will not allow us to detail, he ascertained that water, when converted into steam under the ordinary pressure of the atmosphere, occupies about eighteen hundred times its original space. These points being determined, he constructed a boiler in such a manner, as to show by inspection, with tolerable accuracy, the quantity of water evaporated in any given time; and he also ascertained, by experiment, the quantity of coals necessary to evaporate a given quantity of water. He now applied his boiler to the working model before mentioned; when it appeared, that the quantity of steam expended at every stroke exceeded many times what was sufficient to fill the cylinder; and deducing from thence the quantity of water required to form as much steam as would supply each stroke of the engine, he proceeded to examine how much cold water was used for injection, and what heat it gained; which, to his very great surprise, he found to be many times the number of degrees which could have been communicated to it by a quantity of boiling water equal to that of which the steam was composed. Suspecting, however, that there might be some fallacy in these deductions, he made a direct experiment to ascertain the degree of heat communicated by steam to water; when it clearly appeared, that one part of water, in the form of steam, at 212°, had communicated about 140° of heat to six parts of water. The fact, thus confirmed, was so contrary to all his previous conceptions, that he at first saw no means of explaining it. Dr. Black indeed had, some time before, made his discovery of latent heat; but Mr. Watt's mind being otherwise engaged, he had not attended sufficiently to it to make himself much acquainted with the doctrine: but upon communicating his observations to the Dr., he received from him a full explanation of his theory; and this induced him to make further experiments, by which he ascertained the latent heat of steam to be above 900°. The causes of the defects of Newcomen's engines were now evident. It appeared that the steam could not be condensed so as to form an approximation to a vacuum, unless the cy-

CARRIAGES PROPELLED BY STEAM SURPASS ALL ANIMAL POWER, BECAUSE THEY ROLL ALONG UNIMPEDED BY THEIR OWN SPEED.

THE TERM "HORSE-POWER" IS USED IN SPEAKING OF STEAM-ENGINES, BECAUSE WHEN THEY WERE INTRODUCED THEY SUPERSEDED HORSE-MILLS.

linder, and the water it contained, were cooled down to less than 100°; and that, at greater degrees of heat, the water in the cylinder must produce steam, which would in part resist the pressure of the atmosphere. On the other hand, when greater degrees of exhaustion were attempted, the quantities of ejection water required to be increased in a very great ratio; and this was followed by a proportionate destruction of steam on refilling the cylinder. Mr. Watt now perceived, that to make an engine in which the destruction of steam should be the least possible, and the vacuum the most perfect, it was necessary that the cylinder should condense no steam on filling it; and that, when condensed, the water, forming the steam, should be cooled down to 100°, or lower. In reflecting on this desideratum, he was not long in finding that the cylinder must be preserved always as hot as the steam that enters it; and that, by opening a communication between this hot cylinder when filled with steam, and another vessel exhausted of air, the steam, being an elastic fluid, would rush into it, until an equilibrium was established between the two vessels; and that if cold water, in sufficient quantity, were ejected into the second vessel, the steam it contained would be reduced to water, and no more steam would enter until the whole was condensed. But a difficulty arose—how was this condensed steam and water to be got out of the second vessel without letting in the air? Two methods presented themselves. One was, to join to this second vessel (which he called the *condenser*) a pipe, which should extend downwards more than 34 feet perpendicular, so that the column of water contained in it, exceeding the weight of the atmosphere, would run out by its own gravity, and leave the condenser in a state of exhaustion, except in so far as the air, which might enter with the steam and injection water, should tend to render the exhaustion less perfect: this air he proposed to extract by means of a pump. The second method which occurred, was to extract both air and water by means of a pump or pumps; which would possess the advantage over the other, of being applicable in all situations. This latter contrivance was therefore preferred; and is known by the common name of the *air-pump*. There still remained some defects in Newcomen's cylinder. The piston in that engine was kept tight by water; much of which passing by the sides, injured the vacuum below by its evaporation; and this water, as well as the atmosphere which came into contact with the upper part of the piston and sides of the cylinder at every stroke, tended materially to cool that vessel. Mr. Watt removed these defects, by applying oils, wax, and fat of animals to lubricate his piston and keep it tight; he put a cover on his cylinder (with a hole in it, made air and steam-tight, for the piston-rod to pass through), and employed the elastic force of steam to press upon the piston; he also surrounded the cylinder with a case containing steam, or a case of wood, or of other non-conducting substance, which should keep it always of an equable temperature. In 1765, Mr. Watt executed a working model, the effect of which he found fully to answer his expectations; and the improvement of Newcomen's engine, so far as the saving of steam and fuel was concerned, was now complete. In short, the principle of keeping the vessel in which the elasticity of the steam is exerted always hot, and that in which the condensation is performed always cold, is in itself perfect. For the steam never coming in contact with any substance colder than itself until it has done its office, no part is condensed until the whole effect has been obtained in the cylinder; and when it has acted there, it is so condensed in the separate vessel that no resistance remains: accordingly, the barometer proves a vacuum, nearly as perfect as by the exhaustion of the air-pump. But it will be seen that the perseverance and skill of this great mechanical philosopher were not satisfied while anything remained to be accomplished. He saw the immense importance of the instrument which, it may be said, his genius had created, and he resolved on still devoting all the energies of his mind and body to render it absolutely perfect. In 1782 he invented that beautiful motion, the sun and planet wheel, as a substitute for the crank; and took out letters patent for his expansive engine. In 1784 he obtained a patent for the parallel motion, together with other contrivances; and in the year following he produced his smoke-consuming furnace, the governor, steam-gauge, condenser-gauge, and indicator. Many modifications of the steam-engine were attempted by others without much success: but the next invention of any consequence was by Mr. Cartwright, who introduced the *metallic piston* in his engine, an improvement of undoubted value, and which has since been farther improved upon by Mr. John Barton, whose metallic expanding pistons are now very generally used. Mr. Murray, of Leeds, and Mr. Murdoch, the inventor of gas-lighting, about the year 1800, made several important improvements in constructing the cylinders and working the valves. Mr. Bramah also, about the same period, contrived the four-way cock, as a substitute for the valves, the cock turning always in one direction. Shortly after this, the principle of high pressure was applied with success by Messrs. Trevithick and Vivian, in their simple high pressure engine; the great aim being to form a simple and portable engine, where water was scarce, and where economy of fuel was an object of less moment. These engines were intended chiefly to propel carriages on railways. Many other able engineers and mechanics have contributed, in some way or other, to bring this great invention to its present degree of perfection; but it is our more immediate business to give a description of the main features of the steam-engine as it now exists.—As the

most fatal accidents have occasionally resulted either from imperfections in *the boiler*, or from the neglect or mismanagement of the persons whose duty it is to attend to it, a few words on this fundamental part of the steam-engine are indispensable. If more steam be generated, at a given rate of speed, than is requisite for that speed, the boiler being overcharged will burst; unless some provision be made to guard against such a consequence. Accordingly several appendages, by way of precaution, are attached to it. The first of these is the *safety-valve*, which allows the escape of any superfluity of vapour. There is also the *self-acting damper*, which is so adjusted to the engine, that it will either descend and check the heat of the furnace, or rise and thereby increase the draught; and the self-acting *feeding-pipe*, the use of which is also to regulate the heat in the boiler, and to prevent the metal being burnt and destroyed by the immoderate action of the fire. *Gauge-cocks* are also provided, by the means of which the engineer has it always in his power to ascertain the state of his boiler, and whether or not the self-acting damper is properly performing its duty. To these may be added, the introduction of cylindrical boilers and serpentine tubes, by which increased safety, considerable space, a great saving of fuel, and an accession of power have been obtained. From what has before been said, it will appear that in high pressure engines the steam is not condensed; but after having acted on the piston, is allowed to blow off into the air; whereas, in low pressure engines it passes into a separate vessel, where it is condensed; on which account, and for other reasons, low pressure engines do not suit a rail-road. High pressure engines occupy less room, require less fuel than low pressure engines, and their power can be increased on emergencies, by merely increasing the fire: but the risk of explosion is thereby very considerably increased.—To describe the various applications of steam power would far exceed our limits: but, if we except its adaptation to the motion of carriages, perhaps few of its effects are more astounding than in the manufacture of iron. Thus there are factories where this resistless power is seen, with its mechanic claws, seizing masses of iron, and in a few minutes delivering them out again pressed into thin sheets, or cut into bars and ribbons, as if the iron had become soft, like clay in the hands of the potter. Well, indeed, may it be said, that "the steam-engine has infinitely increased the mass of human comforts, and rendered cheap and accessible all over the world the materials of wealth and prosperity. It has armed the feeble hand of man, in short, with a power to which no limits can be assigned; completed the dominion of mind over the most refractory qualities of matter; and laid a sure foundation for all those future miracles of mechanical power which are to add to and reward the labours of after generations. Already it has become a thing alike stupendous for its force and its flexibility. The trunk of an elephant that can pick up a pin, or rend an oak, is nothing to it. It can engrave a seal, and crush masses of obdurate materials like wax before it: draw out, without breaking, a thread as fine as gossamer, and lift a ship of war like a bauble in the air. It can embroider muslin and forge anchors; cut steel into ribbons; and impel loaded vessels against the fury of the winds and the waves." This, and far more than this, is strictly true; and to what is it all owing but to the genius and perseverance of James Watt! Surely, then, we cannot more appropriately conclude this article, than by quoting a portion of the speech which M. Arago, the secretary to the Royal Academy of Sciences in France, addressed to the members of that institution, in admiration of our illustrious countryman: "Gentlemen," said he, "this creator of six or eight millions of workmen—of workmen indefatigable and industrious, among whom the arm of authority is never called upon to interpose for the suppression of revolt: this man, who, by his brilliant inventions, conferred upon England the means of sustaining itself during a political convulsion, where its very existence, as a nation, was endangered: this modern Archimedes, this benefactor of the whole human race, whose memory future generations will eternally bless—what was done to heap honour upon this man? The peerage is in England the first of dignities, the highest of national rewards. You will naturally suppose that Mr. Watt was at least elevated to the highest rank in the peerage! Such a thing was never even thought of." "Futurity will behold Watt appear before the grand jury of the inhabitants of the two hemispheres,—they will see him penetrating, with the aid of his mighty machine, into the bowels of the earth, in the short period of a few weeks, to the depths where, before his time, it would have required a century of painful labour to arrive—and there opening up spacious galleries and mines, clearing them in a few minutes of the immense volumes of water that encumber them, and snatching from virgin earth the boundless mineral wealth deposited there by bountiful nature. Uniting delicacy with power, he will be seen twisting with equal success the immense folds of the gigantic cable, by which the ship of the line embraces in safety her anchor in the midst of the tumultuous tossing waves; and the microscopic filaments of the delicate muslins and the aerial lace, which float on the zephyrs of fashion. A few oscillations of the same machine will bring into culture extensive swamps; and fertile countries will be rescued from the periodic and deadly miasmata raised up by the burning heats of a summer sun. Population, well fed, well clothed, well warmed, increasing with rapidity, is fast covering with elegant mansions the surface of countries, formerly the deserts of the world, and which eternal barrenness appeared to condemn to the dominion of beasts of prey. In a few years,

what are now but hamlets, will become important cities: in a few years, towns such as Birmingham—where already one reckons three hundred streets—will take rank as the largest, most beautiful, and wealthiest cities of a powerful kingdom. Transferred to our ships, the steam-engine will replace an hundred-fold the power of triple and quadruple ranks of rowers, from whom our forefathers exacted a labour reckoned among the severest punishments of the most atrocious criminals. The steam-engine, in conclusion, drawing in its train thousands of travellers, will traverse the railway with far greater velocity than the best race-horse loaded only with his pigmy jockey!"

STEAM NAVIGATION. One of the greatest triumphs of art, and perhaps in its future consequences the most important invention of any age, is the application of steam to the purposes of navigation. It is common to ascribe this to Robert Fulton, an American engineer; but although, like Watt, he perfected that which was before scarcely applied to any useful purpose, we are bound to trace its origin to an earlier date, and, in so doing, we shall show the real claims of Fulton. So long ago as December, 1736, a patent for a steam-boat was taken out by Jonathan Hull; and a description, with a drawing, published in a pamphlet, in 1737, under the title of "A description and draught of a new invented machine for carrying vessels or ships out of or into harbour, port, or river, against wind or tide, or in a calm." It would, however, appear that, from want of encouragement, the steam-boat was never actually constructed. About twenty years after this, two Americans, named John Ramsey and John Fitch, claimed the honour of inventing steam-boats, as also did Thomas Paine, but none of their plans were ever brought into practice. According to the following version, which has been given with evident proofs of its genuineness, the first steam-boat ever known to succeed was the invention of two Scotchmen, Mr. Miller of Dalswinton, and the tutor of his family, Mr. James Taylor; the former being the first to suggest the application of paddle-wheels in the propelling of vessels, and the latter to suggest the employment of steam as the moving power of these wheels. So far back as the year 1788, they constructed a boat on this principle, the engine of which was made by Mr. Symington, then a young engineer in Edinburgh. Experiments were made with this boat on the lake of Dalswinton, Dumfriesshire, which proved highly satisfactory, the vessels being driven at the rate of five miles an hour. The same gentleman, in the following year, constructed, at the Carron foundry, a larger vessel, which was tried on the Forth and Clyde canal in November and December, 1789, and went at the rate of seven miles an hour. Soon after this, a misunderstanding arose between Messrs. Miller and Taylor, and the prosecution of the invention was by them for some time neglected. Mr. Symington, the engineer, meanwhile, did not abandon the project. Having commenced business at Falkirk, he, in 1801, built another experimental steam-vessel, which was also tried with success on the Forth and Clyde canal, but was interdicted by the canal company, on account of its motion destroying the banks. This vessel, which lay at Lock Sixteen, was inspected by Mr. Fulton, accompanied by Mr. H. Bell of Glasgow, when on a visit to the Carron works; and the consequence was, that in 1807 Mr. Fulton launched a steam-vessel on the Hudson, and, in 1812, Mr. Bell another upon the Clyde, being respectively the first vessels of the kind used for the service of the public in the new and old hemispheres. But Mr. Fulton met with all the obstacles common to new undertakings; for while he was building his first steam-boat at New York, the project was viewed by the public either with indifference, or with contempt, as a visionary scheme. "Never," to use his own words, "did a single encouraging remark, a bright hope, a warm wish, cross my path. Silence itself was but politeness, veiling its doubts or hiding its reproaches. At length the day arrived when the experiment was to be put into operation. To me it was a most trying and interesting occasion. I invited many friends to go on board to witness the first successful trip. Many of them did me the favour to attend, as a matter of personal respect; but it was manifest they did it with reluctance, fearing to be the partners of my mortification, and not of my triumph. I was well aware, that in my case there were many reasons to doubt of my own success. The machinery was new and ill-made; many parts of it were constructed by mechanics unaccustomed to such work; and unexpected difficulties might reasonably be presumed to present themselves from other causes. The moment arrived in which the word was to be given for the vessel to move. My friends were in groups on the deck. There was anxiety mixed with fear among them. They were silent, and sad, and weary. I read in their looks nothing but disaster, and almost repented of my efforts. The signal was given, and the boat moved on a short distance, and then stopped and became immovable. To the silence of the preceding moment now succeeded murmurs of discontent, and agitations, and whispers, and shrugs. I could hear distinctly repeated, 'I told you it would be so—it is a foolish scheme—I wish we were well out of it.' I elevated myself upon a platform, and addressed the assembly. I stated that I knew not what was the matter; but if they would be quiet and indulge me for half an hour, I would either go on or abandon the voyage for that time. This short respite was conceded without objection. I went below and examined the machinery, and discovered that the cause was a slight malformation of some of the work. In a short period it was obviated. The boat was put again in motion. She continued to move on. All were still incredulous. None seemed willing to trust the evidence of their own senses.

We left the fair city of New York; we passed through the romantic and ever-varying scenery of the highlands; we descried the clustering houses of Albany; we reached its shores: yet even then imagination superseded the force of fact. It was doubted if it could be done again, or if it could be made, in any case, of any great value." This problem, however, was soon solved. He constructed new boats with various improvements; and every succeeding effort added to their utility and his fame. A few years only elapsed before they were introduced into Britain. At first the public viewed them with manifest distrust; but the attention of the scientific world being particularly directed to a mode of navigation which now appeared likely to supersede all others, every method that ingenuity could suggest towards their improvement was called into action; till at length the inexhaustible resources of national art and science produced those "ocean steamers" which float across the Atlantic—the triumph of art and the admiration of the world. We shall not allude to the steam-boats which crowd our rivers, or the steam-packets which regularly cross the British channel: these are already become too familiar to the public to require a comment: but we must not dismiss the subject without attempting to convey an idea of those stupendous vessels to which we have alluded. We accordingly take the *Great Western* and the *British Queen* as specimens of what has already been accomplished; and the following particulars will show to what perfection steam navigation has arrived. The splendid steam machinery of the *Great Western* was constructed under the superintendence of Messrs. Maudslay and Field: Length of vessel between perpendiculars, 212 ft.; extreme length, 236 ft.; depth of hold 23 ft. 3 in.; extreme breadth of beam 35 ft. 4 in.; width from outside to outside of paddle-case 58 ft. 4 in.; draught of water (loaded) 16 ft.; burthen in tons 1340; diameter of paddle-wheels 28 ft.; length of paddle-boards 10 ft.; height of centre of shafts 18 ft. 5 in.; numbers of revolutions per minute 15 to 16; diameters of shafts 15 and 16 inches; width of bearings 1 ft. 3 in.; diameter of cylinders 6 ft. 1 in.; length of stroke 7 ft.: diameter of air-pump 3 ft. 4 in.; length of stroke of do. 3 ft. 6 in.; length from centre of shaft to centre of cylinder 19 ft. 6 in.; width from centre to centre of engines 13 ft.; four boilers of equal dimensions, length 11 ft. 6 in.—width 9 ft. 6 in.—height 16 ft. 9 in.; weight of engines about 200 tons; do. boilers 100 do.; water in boilers 80 do.; intended to carry coals in tons 600 do.; capable of carrying 800 do.; consumption of coals, one and a quarter tons per hour, when engines are in full work; or 30 tons per. day; 600 tons will give 20 full days' consumption: 700 do. 23½ do.; 800 do. 26½ do. The *Great Western* left Bristol on her first trip, April 8, 1838, and reached New York on the 24th, thus having been fifteen days five hours on her voyage. Her daily rates were—240, 213, 206, 231, 212, 218, 241, 243, 185, 169, 206, 183, 192, 198, 230 miles, and fifty to harbour, making a total distance of 3223 miles. Out of 600 tons of coals, she consumed only 450, having used resin, and steamed all the way. Her mean daily rate was 215 miles, and hourly nine, with unfavourable weather and strong head-winds. She has since frequently performed the same distance in very considerably less time. In her second voyage out and home, she is computed to have netted about £3000 over and above her expenses: and in her third outward voyage, £3500. The *British Queen*, built for the British and American Steam Navigation Company, by Messrs. Curling and Young, is the largest vessel ever launched, and the proportion between her power and tonnage is stated to be more advantageous than that observed in the *Great Western*. The length of this gigantic vessel from figure-head to taffrail is 275 ft., being about 35 feet longer, it is said, than any ship in the British navy: length on upper deck 245 ft.; of keel 223 ft.; 40 ft. 4 in. breadth between the paddle-boxes; and 27 ft. 1 in. deep from the floor to the under side of the spar deck. The engines are two of 250 horse power each, with cylinders 77½ inches in diameter, and 7 ft. stroke: they are to be fitted with Hall's patent condensers, in addition to the common ones; diameter of paddle-wheels 30 ft. She displaces at 16 ft. deep, 2740 tons of water; her computed tonnage is 1862 tons.

——One of the greatest difficulties encountered in applying steam to the purposes of navigation, arises from the necessity of having to supply the boiler with sea-water. The salt not being evaporated, remains in the boiler; and as a constant egression of steam from the boiler causes as regular an increase of salt, its accumulation soon becomes greater than what water is capable of holding in solution; a deposition of salt in the boilers immediately commences, which in process of time would fill them. As an encrustation on the inner surface of the boilers is also thus formed, the heat is impeded by it, and the metal in some instances rises to such a temperature above the water, that the boilers become red hot and burn. The consequence is, a rapid destruction of the boiler, an unnecessary waste of fuel, and great labour in removing the crust at the termination of each voyage. To remedy this serious inconvenience, several plans have been suggested; but the most effectual appears to be the *patent condenser*, invented by Mr. S. Hall of Basford, near Nottingham. It would occupy too much of our space to detail the mode by which this condenser effects the desired object; but it may be necesesary so far to explain it as to state, that while the steam is continuously passing through the inside of the tubes, a regular stream of cold sea-water is injected by a force pump into the cistern, and made to circulate among them, which, cooling their external surfaces, causes a condensation of the steam. This water is again forced into the sea and replaced by a fresh supply from the force

STEARIC ACID HAS NO ACTION UPON AN INFUSION OF LITMUS WHEN COLD, BUT WHEN HOT CHANGES ITS BLUE COLOUR TO RED.

pump; so that a regular current of cold water flows incessantly through among the tubes. By means of this apparatus, in fact, no waste of the water originally introduced into the boilers can take place, but what arises from leakage; so that if the boilers be filled with pure water, it may be worked for any length of time. The advantages of Hall's patent steam condensers are now fully established; and it is pretty generally admitted that it matters not how hard the wind blows, or how heavy the sea rolls, the same uniform power is maintained as in a calm; and while common engines, under similar circumstances, cannot keep up the vacuum to a higher point than from 20 to 25 inches, the patent engines obtain a steady vacuum of from 29 to 29¾ inches.——With the following account of the *Archimedean* steamer, built upon an entirely new principle, and launched from the yard of Mr. Wynn of Mill-wall, we must conclude: The engine is placed amid-ships, as in other steam-vessels, and the propeller, or paddle, which is under the stern, is worked by a communicating shaft, acting upon "the screw of Archimedes," in the application or use of which the invention is grounded. The propeller being placed under the stern, the inconvenience arising from paddles, which act themselves as a backwater, is avoided; and great benefit is derived in seas when the wind is on the beam, when, instead of a great portion of the power being lost, as before, the paddle works as effectually as in calm weather. Should it be desirable to remove the steam-power, the same may be immediately unshipped, and its action may be stopped, and sailing power substituted. The dimensions of this vessel are:—extreme length, fore and aft, 125 ft.; length between perpendiculars 107 ft.; breadth of beam 22 ft. 6 in.; depth of hold 13 ft.; diameter of screw 7 ft.; length of screw 8 ft; engines of 45 horse power.

STEAM-GUN. Many of our readers must have seen Perkins's Steam-gun exhibited at the "Gallery of Practical Science" in the Strand. It discharges a current of fifty balls in two seconds, against an iron target, and can be re-charged in as many more, propelling the balls either singly or in volleys, so that it is possible to discharge 420 balls in a minute, or 25,200 balls in an hour. The steam-gun, as will be seen, has been regarded as likely to become a mighty instrument of human butchery; it is not, however, as an engine of war alone that it deserves attention, but as a proof of the extraordinary power of the high pressure of steam, and of the ease with which it can be obtained. As early as 1805, the French general Chasseloup is said to have shown the possibility of preparing steam artillery. In 1814, a French engineer constructed ordnance of this sort: the generator furnishing steam for six pieces of artillery, while the turning of a cock supplied all the pieces at once with the balls and steam: this machine could make 150 discharges in a minute. But a still more extraordinary application of steam power to artillery is described by the inventor, Jacob Perkins, in a letter to the editor of the *Franklin Journal*, dated March 8, 1827:—"I am now engaged," says he, "in building steam artillery as well as musketry, for the French government. The piece of ordnance is to throw sixty balls, of four pounds each, in a minute, with the correctness of the rifled musket, and to a proportionate distance. A musket is also attached to the same generator, for throwing a stream of lead from the bastion of a fort, and is made so far portable as to be capable of being moved from one bastion to another. The musket is to throw from one hundred to one thousand bullets per minute, as occasion may require, and that for any given length of time. I am within the truth when I say that, if the discharges are rapid, one pound of coals will throw as many balls as four pounds of powder."

STEARIC ACID, or STEARINE, is the solid constituent of tallow, olive oil, and other unctuous substances, converted into a crystaline mass by saponification with alkaline matter, and abstraction of the alkali by an acid. By this process three acids, called *stearic*, *margaric*, and *oleic*, are produced. The *stearine* used by the manufacturers, is obtained from the St. Petersburgh or Odessa tallow, although it is sometimes used when procured from vegetable oils. It is converted into stearic acid by boiling it with one part of quicklime to eight of stearine, and afterwards separating it by sulphuric acid. It is further cleansed from oleic acid, which is present, by congealing it, and subjecting it to pressure. The stearic acid thus procured is not quite pure; it is again and again washed with a weak acid, and the same process is repeated, to abstract from it whatever oleic acid may remain behind. The pure stearic acid is semi-transparent, has a waxy appearance, and closely resembles spermaceti. It is melted in a silver pan, because other metals would colour it; when at a proper temperature, it is poured into the moulds, and forms a candle closely resembling one made with wax. If the temperature be raised too high, the acid crystalizes, and becomes brittle; two qualities by which it is rendered nearly unsaleable, but which may be prevented by the addition of a little wax, magnesia, or French chalk. Manufacturers, however, had recourse to a very pernicious practice, employing white arsenic to prevent this brittleness. At first, a very small quantity was used—viz. one-eighth of a grain in a candle; but after a time it was much increased, eight ounces being added to the cwt.; however, since the investigation that has taken place, and since the publication of the various facts relative to the employment of this poison, manufacturers have almost entirely ceased to make use of it, so that the expression of public opinion has, in this instance, been of service.

STEATITE, AMONG OTHER USES, IS DUSTED IN POWDER UPON THE INSIDE OF BOOTS, TO MAKE THE FEET GLIDE EASILY INTO THEM.

STE'ATITE, in mineralogy, a sub-species of rhomboidal mica. It is a compact stone, white, green, gray, brown or marbled. It is found in metalliferous veins,

with the ores of copper, lead, zinc, silver, and tin. It is sometimes called *soap-stone*, from the magnesia which it contains making it soft, and apparently unctuous to the touch. It is used in the manufacture of porcelain, and for taking greasy spots out of silk and woollen stuffs; it is also employed in polishing gypsum, serpentine, and marble. When pounded, and slightly burned, it forms the basis of certain cosmetics; and among the more useful applications of steatite is that of diminishing the friction of machinery. Humboldt assures us that the Otomacks, a savage race on the banks of the Orinoco, live for nearly three months of the year on a kind of potter's clay; and many other savages eat great quantities of steatite, although it contains no sort of nourishment.

STEEL, iron combined with a small portion of carbon. Iron, on being made into steel, becomes harder than any other metal. It is tempered, or hardened, by plunging it, when hot, into cold water. If heated, and not subsequently plunged into water, it remains soft; but when refined and hardened, it is admirably fitted for the making of superior edge-tools. Steel may be made three hundred times dearer than standard gold, weight for weight; six steel wire-springs for watch pendulums weigh one grain, to the artists, 7*s.* 6*d.* each, equal to 2*l.* 5*s.*; one grain of gold being of 2*d.* value.——The *natural steel*, or *German steel*, is an impure and variable kind of steel procured from cast-iron, or obtained at once from the ore. It has the property of being easily welded, either to iron or to itself. Its grain is unequally granular; its colour usually blue; and it acquires only a middling hardness. The natural steel, yielded by cast-iron, manufactured in the refining houses, is known by the general name of *furnace steel;* and that which has only been once treated with a refining furnace, is particularly called *rough steel*. The best cast-iron for the purpose of making natural steel, is that obtained from the brown hæmatite, or from the sparry iron ore.

STEEL'YARD, or Roman balance, in mechanics, a balance by which the gravities of different bodies are found, with the assistance of a single weight. It consists of a rod or bar marked with notches, designating the number of pounds and ounces, and a weight which is movable along this bar, and which is made to balance the weight of the body by being removed at a proper distance from the fulcrum.

STEER'AGE, in a ship of war, an apartment before the bulk-head of the great cabin, where the steersman stands. Also an apartment in the forepart of a ship for passengers.——*Steerage-way*, that degree of progressive movement of a ship, which renders her governable by the helm.——*Steersman*, the man at the helm employed to regulate the ship's course.

STEGNOT'ICS, medicines proper to stop the orifices of the vessels or emunctories of the body, when relaxed or lacerated.

STEIN'HEILLITE, in mineralogy, a variety of iolite.

STEL'ECHITE, a fine kind of storax.

STELLA'TÆ, the 47th Linnæan natural order of plants, with leaves disposed round the stem in a star-like form.

STEL'LATE, or STEL'LATED, in botany, an epithet used when more leaves than two surround the stem in a whorl, or when they radiate like a star. A *stellate bristle* is when a little star of smaller hairs is affixed to the end. A *stellate flower* is a radiate flower.

STEM, in botany, that part of a plant which sustains the root, leaves, and flower. The main stock, or firm part which supports the branches.——*Stem*, in ship-building, the circular piece of timber into which the two sides of the ship are united at the fore-end; the fore part of the ship, as opposed to the stern.——*From stem to stern*, from one end of the ship to the other.

STEM'PLES, in mining, cross bars of wood in the shafts of a mine.

STEN'CILLING, a method of painting on walls with a stencil, so as to imitate the figures on paper hangings.

STENOG'RAPHY, the art of writing in short-hand, by using abbreviations or characters for whole words. Some systems are replete with unmeaning symbols and ill-judged contractions; while others are too prolix, by containing a multiplicity of characters, and those characters not simple or easily remembered. No system of arbitrary signs, in fact, however scientific, can, without extensive practice, be of much use to the student; and it is not therefore surprising that many of our most expert reporters neglect or abandon the study of it altogether.

STENTO'RIAN [from *Stentor*, a herald in Homer, whose voice was as loud as the united voices of fifty other men], able to utter a very loud sound. The word *stentorophonic* is also sometimes, though rarely, used.

STEPPES, in Russia, an uncultivated tract of land or desert of great extent.

STEREOG'RAPHY, the art of drawing the forms and figures of solids upon a plane.

STEREOM'ETRY, that part of geometry which teaches the art of measuring solids, or ascertaining the solid contents of bodies.

STEREOT'OMY, the science or art of cutting solids into certain figures or sections; as walls or other members in the profiles of architecture.

STE'REOTYPE, an entire solid plate or piece of type cast from an impression in gypsum of a page composed with movable types. Thus we say, a book is printed *on* stereotype, or *in* stereotype. In the latter use, the word seems rather to signify the workmanship, or manner of printing, than the plate. [See PRINTING.]

STER'LING, in English commerce, a term which is applied to money, signifying that it is of the fixed, or standard, national value; thus, "a pound sterling" is not indefinitely "a pound," but "an Eng-

PERUVIAN STEEL IS AN ALLOY OF STEEL WITH CERTAIN PORTIONS OF OTHER METALS FROM PERU, WHICH RENDER IT HARDER.

TO PRESERVE IRON FROM RUST, DIP IT, WHEN AT A DULL RED HEAT, INTO WATER, AND THEN INTO LINSEED OIL, TO FORM A VARNISH.

lish pound." Camden appears to offer the true etymology of this word, when he derives it from *easterling*, and corroborates, if not demonstrates, the propriety of this suggestion, by quoting old deeds, where English coin is always called *nummi easterlingi*. In explanation, he observes, that in the reign of Richard I. money coined in the eastern part of Germany grew to be much esteemed in England, on account of its purity: this money was called *easterling* money, as all the people of those parts were called easterlings; and in consequence of the partiality related, some of the *easterling* coiners were invited into this kingdom, to perfect its coinage, which was thenceforward denominated *easterling*, *esterling*, or *sterling*. During a considerable period, the only coin in England was one of about the value of a penny: whence it happens, that many ancient writers use the word *easterling* as a substantive, and synonymously with *penny*.——The word *sterling* has also a more general application. We speak of *sterling* value, *sterling* worth, or *sterling* wit; thereby meaning genuine and of good quality.

STERN, the hind part of a ship or other vessel.——*Stern-chase*, a cannon placed in a ship's stern, pointed backward, and intended to annoy a ship that is in pursuit of her.——*Stern-frame*, the several pieces of timber which form the stern of a ship.——*Stern-post*, a straight piece of timber, erected on the extremity of the keel to support the rudder, and terminate the ship behind.

STER'NUM, in anatomy, the *os pectoris*, or breast-bone, a cartilaginous bone which composes the fore-part of the breast, and into which the ribs are fitted; forming the front of the human chest from the neck to the stomach.

STER'TOR, a noisy kind of respiration, such as is observed in cases of apoplexy; loud snoring or snorting.

STETH'OSCOPE, in medicine, a tubular instrument for discovering, by auscultation, the minutest variations from the healthy standard. This is done by the physician applying the stethoscope to the chest or abdomen of a patient, and putting the ear to the narrow end. This useful instrument was invented by Laennec, in the 18th century, and improved by Dr. Forbes.

STEW'ARD, a man employed in great families to superintend the household generally, to collect the rents or income, keep the accounts, &c. A steward is always a principal officer within his jurisdiction.—The greatest officer under the crown is the *lord high steward of England*, an office that was anciently the inheritance of the earls of Leicester, till forfeited by Simon de Mountfort, to king Henry III. But the power of this officer is so very great, that it has not been judged safe to trust it any longer in the hands of a subject, excepting only *pro hac vice*, occasionally; as to officiate at a coronation, at the arraignment of a nobleman for high treason, or on other solemn occasions. During his office, the steward bears a white staff in his hand, and on the trial, &c. being ended, he breaks the staff, and with it his commission expires.—There is likewise a lord steward of the royal household, who is the chief officer of the court, &c.——In colleges, an officer who provides food for the students, and superintends the concerns of the kitchen.——In a ship of war, an officer who is appointed by the purser to distribute provisions to the officers and crew.—In other ships, a man who superintends the provisions and liquors, and supplies the table.

STHE'NIC, in medicine, an epithet applied to diseases in general which arise from excessive excitement; the opposite of *asthenic* diseases, or such as arise from debility.

STI'CK'LE-BACK, in ichthyology, a small fish of the genus *Gasterosteus*, of several species. The common species seldom grows to the length of two inches.

STIG'MA, in botany, the top of the pistil where the pollen is received. It is moist and pubescent, to detain and burst the prolific powder.

STIGMA'TA, the pores in insects through which air is respired.——*Stigmata*, in antiquity, certain marks impressed on the left shoulders of the soldiers when enlisted.——*Stigmata* were also a kind of notes or abbreviations, consisting only of points disposed various ways, as in triangles, squares, crosses, &c.

STIG'MATIZING, in antiquity, the act of affixing a mark upon slaves, sometimes as a punishment, but more usually in order to know them. It was done by applying a red-hot iron, marked with certain letters, to their foreheads, till a fair impression was made, and then pouring ink into the furrows, that the inscription might be the more conspicuous. *Stigmatizing*, among some nations, was, however, looked upon as a distinguishing mark of honour and nobility.

STIL'BITE, a mineral of a shining pearly lustre, and a whitish or gray colour. It has sometimes been called foliated zeolite or radiated zeolite.

STILL, a chemical apparatus for vaporizing compound fluids, and re-condensing the vapours of each of the component parts as they are successively raised by heat. It consists of an alembic, a worm, a refrigerator, and a receiver.

STILPNOSID'ERITE, a mineral of a brownish black colour, massive, in curving concretions, splendent and resinous.

STIM'ULANT, in medicine, an epithet for whatever excites and increases the action of the moving fibres or organs of an animal body.——*To stimulate*, in a general sense, is to rouse or animate to action by some powerful motive. In a medical sense, to excite or increase bodily action; as to *stimulate* a torpid limb; or to *stimulate* the stomach and bowels.

STIM'ULUS, any medicine or aliment which increases or excites the energy of an animal.——In a general sense, that which rouses the mind or spirits; as, the hope of

THE GREAT BRITAIN WAS CONSTRUCTED FOR THE TRIAL OF PERS INDICTED FOR TREASON, &C.

PRISONERS OF WAR WERE FORMERLY "STIGMATIZED," OR BRANDED WITH A HOT IRON, AS THE SLAVE TRADERS BRAND THE NEGROES.

IN BUYING STOCKS IN ENGLAND, THE PURCHASER DOES NOT RECEIVE ANY CERTIFICATE, BUT HIS NAME IS ENTERED ON THE BOOKS.

ANGOLA STOCKINGS COMBINE WORSTED AND COTTON IN THE CLOSEST INTERMIXTURE, AND ARE THEREBY RENDERED WARMER THAN OTHERS.

gain is a powerful *stimulus* to labour and action.

STING, a barbed spear, projected by many insects in defence from real or supposed dangers. In most instances, this instrument is a tube, through which a poisonous matter is discharged, which inflames the flesh, and in some instances proves fatal.

STIPEN'DIARY, one who performs services for a settled compensation, or stipend, either by the day, month, or year.

STI'PES, or STIPE, in botany, a species of stem passing into leaves, or not distinct from the leaf. The stem of a fungus is also called a *stipe*. The word is also used for the filament or slender stalk which supports the pappus or down, and connects it with the seed.

STIP'ITATE, in botany, supported by or elevated on a stipe.

STIP'PLING, in the arts, a method of engraving in dots, as distinguished from *etching* in lines. [See ENGRAVING.]

STIPULA'TION, a contract or bargain; as, the *stipulations* of the allied powers to furnish each his contingent of troops.

STIP'ULE, or STIP'ULA, in botany, a scale situate at the base of nascent petioles or peduncles: stipules are in pairs or solitary.

STIR'RUP, in ship-building, a piece of timber put under the keel when some part of it is lost.——*Stirrups*, in a ship, short ropes, having their upper ends plaited, and nailed round the yards, and eyes made in their lower ends, through which the horses are reeved, to keep them parallel to the yards.

STI'VER, a Dutch coin, equal to about a halfpenny in value.

STO'Æ, in antiquity, porticos in Athens, which were the resort of philosophers, particularly the Stoics.

STOAT, in zoology, a sort of weasel; a variety of the ermine: the *Mustela erminea* of Linnæus.

STOCK, in commerce, any fund consisting of money or goods employed by a person in trade, particularly the sum of money raised by a company for carrying on any trading concern.——*Stock* is a general name for the capitals of our trading companies. It is a word also that denotes any sum of money which has been lent to government, on condition of receiving a certain interest till the money is repaid. Hence the price of stocks, or rates per cent., are the several sums for which 100*l.* of those respective stocks sell at any given time. The denominations of the existing stocks are, three per cent. consols, three per cent. reduced, three-and-a-half per cent. reduced, four per cent. 1826, three-and-a-half per cent. 1818, three per cent. 1726, and long annuities. The three per cent. consolidated annuities and the three per cent. reduced, always bear a greater price, and the purchases in them are more readily made than in the other stocks or funds.——*Stock*, the wooden part of many instruments, as the *stock* of an anchor, the *stock* of a gun, &c.——*Stock*, in agriculture, the domestic animals or beasts belonging to the owner of a farm; as a *stock* of cattle or of sheep. Cattle are also called *live stock*.——*Stocks* (plur.), a machine consisting of two pieces of timber, in which the legs of criminals are confined by way of punishment.——*Stocks*, the frame or timbers on which a ship rests while building. Hence we say, "a ship is *on the stocks*."

STOCK'-BROKER, one who deals in the purchase and sale of stocks or shares in the public funds, for others.

STOCK'-DOVE *(Columba ænas)*, in ornithology, the wild pigeon of Europe, long considered as the *stock* of the domestic pigeon, but now regarded as a distinct species.

STOCK'-EXCHANGE, the place or building where the public stock is bought and sold. The *Stock-exchange*, situated in Capel-court, was opened in 1802. Formerly the place of rendezvous for persons transacting business in the stocks, was Jonathan's coffee-house, in 'Change-alley, Cornhill, and it is from this circumstance that the expression *Alley* is familiarly used, as a cant phrase for the stock-exchange, and that a petty speculator in the funds is styled a "dabbler in the alley." [See EXCHANGE.]

STOCK'-JOBBER, one who speculates in the prices of annuities, from day to day, or by anticipation for future time: a desperate species of gambling, by which thousands are annually ruined.——*Stock-holder*, one who is a proprietor in the public funds, or in the funds of a bank or other company.

STOCK'INGS, a species of tissue, extremely elastic, and readily adapting itself to the limbs it is designed to cover. They are made either of silk, wool, cotton, or thread, &c. knit by the hand or woven in a frame. Silk stockings were first worn by Henry II. of France, 1547. Howell says, "that, in 1560, queen Elizabeth was presented with a pair of black silk knit stockings by her silk-woman, Mrs. Montague, and she never wore cloth ones any more." He adds, "that Henry VIII., that magnificent and expensive prince, wore ordinarily cloth hose, except there came from Spain, by great chance, a pair of silk stockings for gala-days." The English and French have often contested the honour of inventing the stocking-frame; but whatever pretensions the French may suppose they have to it, this honour was certainly due to Mr. W. Lee, of Woodborough, Nottinghamshire. He attempted to set up an establishment at Calverton, near Nottingham, but instead of meeting with that success to which his genius and inventions so well entitled him, he was discouraged and discountenanced. Being, however, invited by Henry IV. of France, who promised him a magnificent reward if he would carry his machinery to that country, he settled at Rouen, where he introduced the stocking-frame with distinguished success; but after the assassination of the king, the concern got into difficulties, and Lee died in poverty at Paris.

Some of the workmen who had emigrated with him, returned to England, and established themselves in Nottinghamshire, which still continues the principal seat of the manufacture. During the course of the last century the machine has been very greatly improved.

STO'ICS, in antiquity, a sect of philosophers amongst the Greeks, whose founder was Zeno. They denied the existence of innate ideas, and consequently held that sensation and reflection were the only foundations of human knowledge. They taught that the true end of man consists in living conformably to nature, and in obedience to his internal monitor, that particle of the divinity which constitutes the soul. They taught that good is what conducts men to felicity, and that all good things are equal; that passions arise from false judgments; that duty consists in the investigation of moral truth, and in living agreeably to the obvious destination of our nature. They had also paradoxes peculiar to themselves, asserting that pain is no evil; that a wise man is free from all perturbation of mind; and that it is the duty of man to submit without complaint to the unavoidable necessity imposed on him by his destiny. [See PHILOSOPHY.]

STO'LA, in antiquity, a long robe in use among the Roman ladies, over which they wore a large mantle, or cloak, called the *pallium*. —— Also a sacerdotal-ornament worn by the Romish parish priests over their surplice, as a mark of superiority in their respective churches; and by other priests over the alb, while celebrating mass.

STOM'ACH, in anatomy, a hollow membranous receptacle, situated in the epigastric region, immediately under the diaphragm, and obliquely between the liver and the spleen; the superior orifice of which is termed the *cardia*, and the inferior the *pylorus*. The use of the stomach is for the digestion of our food; that is, to receive, contain, dissolve, and change what is swallowed; and after a sufficient concoction, to expel it through the pylorus into the intestines. It is also the organ in which the sensation of hunger resides.

STOMACH'ICS, medicines which excite the action and strengthen the tone of the stomach.

STOM'ACH-PUMP, a small pump lately introduced into medical practice, for removing poisons from the stomach. It resembles the common small syringe, except that there are two apertures near the end, instead of one, which, owing to valves in them opening different ways, become what are called a *sucking* and a *forcing* passage. When the object is to extract from the stomach, the pump is worked while its sucking orifice is in connexion with an elastic tube passed into the stomach; and the discharged matter escapes by the forcing orifice. When it is desired, on the contrary, to inject water or other liquid into the stomach, the connexion of the apertures is reversed.

STONE, in mensuration, a quantity or weight used in measuring various commodities, and of which the amount itself is various.

STO'NE-CROP, in botany, a plant of the genus *Sedum*; wall-pepper. The stone-crop tree or shrubby glass-wort is of the genus *Chenopodium*.

STO'NE-FRUIT, in botany, a *drupe*, or those kinds of which the seed or kernel is enclosed in a hard case, covered with pulp, as cherries, plums, &c.

STO'NEHENGE, in English topography, the remains of a public structure of the ancient Britons, still extant upon Salisbury plain. It consists of many unhewn stones, which, with some that are wanting, appear to have originally composed four ranks, one within another. Some of them, especially in the outermost and the third ranks, are twenty feet high and seven broad. The vertical stones sustain horizontal ones, laid across their heads, and fastened by mortises. The whole is supposed to have been once joined together. The purpose of a place of this description, among the generations which, two thousand years ago, peopled the island of Britain, and were not so barbarous or inconsiderable as is commonly supposed, and as the vanity and superior refinement of the Romans contribute to represent, seems to have been that of religious worship. What that religion was can only be conjectured; but judging of these ruins by their similarity to the huge remains of buildings still existing in Egypt,—as well as from the circumstance that the heads and horns of oxen and other animals have been found buried in the spot,—it has been thought that the rites peculiar to solar worship were there performed; and, consequently, that Stonehenge was once a temple of Baal.

STONES, in natural history, are defined to be essentially compound fossils; found in continued strata, or beds, of great extent; formed either of congeries of small particles, in some degree resembling sand, and lodged in a smoother cementitious matter, both of these running together into one smooth mass; or, finally, of granules cohering by contact, without any cementitious matter among them; or composed of crystal or spar, usually debased by earth, and often mixed with talc and other extraneous particles. The principal component parts of stones are silex, alumina, zircona, glucina, lime, and magnesia: sometimes the oxydes of iron, manganese, nickel, chromium, and copper, are also found to enter into their composition. In popular language, very large masses of concretions are called *rocks*; and very small concretions are universally called *gravel* or *sand*. Stones are of various degrees of hardness and weight; they are brittle and fusible, but not malleable, ductile, or soluble in water. They are of great and extensive use in the construction of buildings of all kinds. When we speak of the substance generally, we use *stone* in the singular, as, a house or wall of stone. But speaking of particular separate masses, we say *a stone*, or *the stones*. [See ROCKS.]

STONE WHICH ABOUNDS WITH CLAY, OR ALUMINE, ABSORBS SO MUCH MOISTURE, THAT IT RAPIDLY GOES TO DECAY.

STO'RAX, a resinous and odoriferous drug, or solid balsam, of a reddish brown colour. It is obtained from the *Styrax officinalis*, a tree which grows in the Levant. *Liquid storax*, or *styrax*, is a liquid or semi-fluid balsam, said to be obtained from the *Liquid amber styraciflua*, a tree which grows in Virginia. It is greenish, of an aromatic taste, and agreeable smell.

STORK, in ornithology, a bird nearly allied to the crane and the heron, which are all included under the genus *Ardea*. Besides the common stork, there are two others, viz. the black stork, with the breast and belly white, an erect and beautiful bird, somewhat larger than the common heron; and the Brazilian stork, variegated with black and white.——In heraldry, the *stork*, as an emblem of piety and gratitude, is a frequent bearing in coat armour.

STORMS. No branch of natural philosophy has more engaged the attention of men of science during the last four years, than what is termed "*the Law of Storms.*" Col. Reid, of the Royal Engineers, who has published a very interesting work upon this important inquiry, gives the following opinion as to a theory upon which he explains the origin of storms. He observes, that "it is a well-known fact, that some parts of the globe are more subject to storms than others, and throughout this investigation he has felt impressed with the opinion, that the force and frequency of storms may have some connexion with the law of magnetic intensity. The islands of Mauritius and St. Helena are nearly in the same degree of south latitude; yet, at St. Helena, a gale was scarcely ever known, and it is said to be entirely free from actual storms. Those who study Major Sabine's report on the magnetic intensities of the globe, and follow his isodynamic lines, which express unity, will find them opening from each other into the northern part of the South Atlantic, and including a space which thus really appears to be the true Pacific Ocean of the world. Within this space, on Major Sabine's charts, will be found two other lines, marking intensities in decimal parts less than unity; and he states that the intensity at St. Helena, as observed by Capt. Fitzroy, is 0.84, 'the lowest denomination recorded, and the locality of the weakest intensity yet observed on the globe.' When we examine the lines of the greatest intensity, we find them approaching each other in longitude 110° and 260° (100° W.), but in different latitudes; for the line of least intensity does not coincide with the earth's equator. In the Chinese Sea, in longitude of 110° E., it is to the north of the equator, proceeding thence in a direction southward of St. Helena. Of the supposed four magnetic poles, the positions of the two in the northern hemisphere are best ascertained. The meridians which run through these two poles, run also through the Chinese Sea, and near the Caribbean Sea, the localities of typhoons and hurricanes; and Major Sabine's isodynamic lines indicate the magnetic intensities so strongly marked there, that we are led to the belief that there must be some connexion between the magnetic intensity and the force of storms. The study of electricity, as connected with the weather, deserves to be renewed. Comparisons may hereafter be made between the electric state within the compass of a great storm and the atmosphere around its verge; and if seamen dare to pass across the smaller gyrating columns, or circles, they may possibly be able, by finding out their electrical state, to explain the cause of their now mysterious action."—At a meeting of the British Association in 1838, the colonel read a paper on the "Law of Storms," which gave rise to considerable discussion. Professor Bache stated that Mr. Espy, of Philadelphia, held that storms were created by winds blowing into a centre made by the condensation of the atmosphere; and he, Mr. Bache, had himself surveyed the course of a land tornado, in which all trees, buildings, &c. had fallen inwards, as if this were the true exposition of the phenomenon. Professor Stevelly compared the motion of the aerial phenomenon to that of water running out of a tub, in the bottom of which a small hole was made. Sir John Herschel observed, that a knowledge of the present subject would teach seamen how to steer their ships, and save thousands of lives. Sir John suggested that the gulf-stream might be connected with the theory involved in this investigation; and also that the trade-winds might throw a light upon the phenomena which it presented. He also alluded to the spots observed on the sun, which, by analogy, might bear upon it, as he considered them, without doubt, to be the upper apertures of great hurricanes passing over the disk of that luminary, the atmosphere moving analogously to our trade-winds, and being disturbed by certain causes, precisely as the earth's atmosphere might be. It is also worthy of notice, that in Purdy's Memoir of the Atlantic Ocean, it is stated, "that while one vessel has been lying to in a heavy gale of wind, another, not more than thirty leagues distant, has, at the very same time, been in another gale equally heavy, and lying to with the wind in an opposite direction." This statement is obviously to be understood as applicable to two vessels falling under the two opposite sides or portions of the same storm, where the wind in its regular circuit of rotation must, of course, blow from the opposite quarters of the horizon.—But to bring our information down to the latest period, we must refer to the proceedings of the British Association at Glasgow (October, 1840), where we find Mr. Espy giving in detail the result of his observations on the "theory of storms." He commenced by stating, that he had found, by examining simultaneous observations in the middle of storms, and all round their borders, that the wind blows inwards on all sides of a storm towards its central parts; towards a point if the storm is round, and towards a line if the storm is oblong,

extending through its longest diameter. "He went into a great many instances of storms which had happened at particular seasons, and from facts ascertained as to the direction of the winds at various places around the space in which the storm prevailed, he showed that the facts confirmed his theory. For instance, from the storm on the 6th January, 1839, he had prepared on the map an illustration of his theory. The storm began at Liverpool from ten to eleven o'clock P.M. on that evening, and he had written to various places to ascertain the direction of the wind between ten and twelve o'clock P.M. At the north-west of Scotland, near Cape Wrath, the wind was N.W. and it was the same all over the west of Scotland. In Ireland, at the same hours, it was W. and S.W. In the south-west of England it was S.W. On the south-east of England, at the same hours, S.S.E.; and in some places direct S.E.; at Birmingham, a little E. of S.; at Leeds and Manchester, S. of E.; at Liverpool at ten, S.S.E.; and before twelve, S.W. nearly. Thus, were a line drawn from the north-east of Scotland to the south-west of Ireland, on one side of the line the wind would be found to have blown from the N.W. and on the other from the S.E. Mr. Espy then referred to other storms here, in the West Indies, and in America, which went to prove the same theory. The principles upon which it is founded are nearly the following:—The equilibrium of the air may become unstable by the heat or the moisture below. Ascending columns or currents of air are thus formed, which, as they ascend, are subject to less pressure and expand. This expansion produces 1¼° of cold for every hundred yards of ascent, while the dew-point falls only ¼° for the same space. Clouds will begin to be formed when the column of air rises as many hundreds of yards as the dew-point is below the air in degrees. When the vapour condenses it will give out the latent caloric into the air, which will prevent the ascending air from cooling more than half as much as it would otherwise have done on its farther ascent. Thus, the higher the column of air rises, the warmer it will be when compared with the air on the outside of the cloud at the same height. For every degree that the cloud is warmer, it will be a certain amount lighter than air at zero, and thus under the cloud the barometer will fall, and the air will run in under the cloud and upwards, with a velocity of upwards of 240 feet per second. After a long account of his theory of the formation of clouds, Mr. Espy gave a description of the effects of the tornado, which he held to be additional evidence in favour of his theory.—Sir D. Brewster stated that he had received a letter from Colonel Reid, from which it appeared that five water-spouts had been examined carefully with the telescope, in all of which it appeared that there was a revolution of the particles of water in the manner of the hands of a watch, from left to right, and that in the midst of such contradictory statements of facts it appeared difficult to settle the question without further examination.—Professor Phillips, in answer to Sir. D. Brewster, said, he did not conceive that any appearance exhibited by a water-spout could invalidate the conclusive evidence that was to be found of a direct inward motion to a centre, in the case of the tornado, on visiting the path it makes through a forest, and finding the trees thrown down as stated by Mr. Espy; and to him it appeared perfectly conclusive, that there must have been such a direct inward motion in the tornadoes described by the author of this paper. Mr. Espy had disposed of this objection in his explanation of the tornado, where he showed that all bodies taken up on the right-hand of the centre of the path of the tornado must, from the laws of dynamics, go up in a spiral from right to left; while those taken up on the left-hand of the path must move in a spiral upwards from left to right; and that consequently one person might see the tornado whirl in one direction, and another in the other, according to the uniform testimony of the witnesses, along the whole tract of the tornado. Professor Forbes presented three difficulties as objections, which he requested Mr. Espy to answer:—1st. How it was possible to conceive that such a mighty mass of air as he represented, pressing in towards a common centre for hundreds of miles around, could find vent up the very narrow vortex in the centre of the storm? It would require very strong proof to overcome the *à priori* improbability that such was the case. 2nd. That as the tornado had an onward motion, it appeared to him difficult to find phenomena, on viewing the path of a tornado, which would prove without doubt that the motion of the air was inwards to a common centre; for the manner in which trees were thrown down would depend very much on the velocity of the onward motion, compared with the velocity of the wind in the tornado itself. 3rd. He thought Mr. Espy would find that nearly all the vapour in the air would be condensed into water or cloud on going up the ascending column, before reaching any very great height in the atmosphere: and it seemed difficult for him to conceive how the principle of the evolution of latent caloric could produce so great an effect in the comparatively short column of the atmosphere, to cause the barometer to sink as much as it is known to do in great storms. Mr. Espy took these objections in their inverse order. He stated, as to the last objection, that if all the vapour should be condensed into water, the effect would be found to be even greater than he had stated in depressing the barometer; for it was known that, for example, if the dew-point was 70° of Fahrenheit, it contained latent caloric enough to heat the whole atmosphere about 70°, and, of course, half the atmosphere to double that amount; and the professor would find on calculation that the barometer would fall under such a column of 70°, 4-48ths of 30 inches. His (Mr. Espy's) calculation had been made on

the supposition that only about three-fourths of the vapour ever is condensed, however high the column may ascend. To the second objection Mr. Espy replied, that Mr. Redfield himself had proposed as a test of the truth of Mr. Espy's doctrine of inward motion, that the trees in the centre of the path should be found with their tops thrown either backwards or forwards, and he (Mr. Espy) introduced professor Holmstead's testimony that such was the fact in the Newhaven tornado. And as to the great hurricanes in the West Indies, Mr. Redfield stated it would be a proof of Mr. Espy's doctrine, if it should be found that those storms began with the wind north-westerly, and ended south-easterly; and to prove that this was the fact, Mr. Espy quoted Edwards's "History of Jamaica," and also the fourth volume of the "Royal Philosophical Transactions," where it is stated that these storms begin with the wind north-west, and, when the wind gets round south-east, the foul weather breaks up. To the first objection Mr. Espy replied, that he did not mean to say that in the large storms of several hundred miles wide they pressed in to the centre to a very narrow vortex before it began to ascend; on the contrary, however wide the cloud extended, it must be going upward, there to form that cloud, frequently leaving a wide space in the centre, where there was a dead calm; and as to the tornadoes, where the vortex was very narrow—not more than two or three hundred yards wide in many cases—it was a perfectly well-established fact that all round the tornado, before and behind, and at the sides, it was a dead calm within a very few yards of the tornado itself: which fact was explained in that part of his paper which had not been read. Mr. Osler stated that, from the investigation he had given the subject, he was convinced that the centripetal action described by Mr. Espy took place in most hurricanes: the particulars he (Mr. O.) had collected, together with the indications obtained from the anemometers at Birmingham and Plymouth, satisfied him that the action of the great storm of the 6th and 7th of January, 1839, was not rotatory *at the surface of the earth* when it passed over England. He differed, however, from both Mr. Espy and Mr. Redfield in one essential point, for he believed that it would be almost impossible for a violent hurricane to take place without at the same time having both *rotatory and centripetal* action. The storm might very probably be generated, in the first instance, in the manner accounted for by Mr. Espy, as well as occasionally by contrary currents; in the first case, the rush of air towards a spot of greater or less diameter would not be perfectly uniform, owing to the varying state of the surrounding atmosphere; this, together with the upward tendency of the current, would, in some cases, produce a violent eddy, or rotatory motion, and a whirlwind, of a diameter varying with the cause, would ensue. The centripetal action would thus be immensely increased, the whirlwind itself demanding a vast supply of air, which would be constantly thrown off spirally upwards, and diffused over the upper atmosphere: thus causing the high state of the barometer which surrounds a storm. When no rotatory action takes place, we merely experience the rush of air which necessarily precedes a fall of rain or a thunder-storm, in consequence of the condensation of moisture: but that nothing violent enough to be called a hurricane can take place unless a strong rotatory action, or in fact a whirlwind, is produced; and that in most cases the rotating portion is not in contact with the earth, and consequently we only felt its secondary or centripetal action." [For the foregoing abridged report we beg to acknowledge our obligations to the *Literary Gazette*, Oct. 10, 1840.]

STO'RY-POSTS, in carpentry, upright timbers disposed in the story of a building, for supporting the superincumbent part of the exterior wall by means of a beam over them.

STRABIS'MUS, in medicine, squinting; a distortion of one or both of the eyes, whereby the pupil is turned from, instead of being directed towards, objects.

STRAIT, or as it generally written, STRAITS, in geography, a narrow pass of the ocean, through which the water flows from one sea to another. The straits of Gibraltar, about 130 miles long and 12 broad, join the Mediterranean sea with the Atlantic ocean. The strait which in a similar manner joins the Baltic with the Atlantic, is called the Sound; and that between Britain and France, the straits of Dover.

STRAMO'NIUM, in botany, a species of *Datura*, commonly growing wild in many parts of Europe and America. All parts of the plant exhale a strong and nauseous odour; and, taken internally, is one of the most dangerous of narcotic poisons. It has, notwithstanding, been employed with advantage in convulsive and epileptic affections; and smoking the dried leaves has often proved beneficial in cases of asthma.

STRAND, the shore or beach of the sea or ocean, or of a large lake, and sometimes of a navigable river; but never used when speaking of the bank of a small river or pond.

STRAPPA'DO, a military punishment formerly practised. It consisted in drawing an offender to the top of a beam and letting him fall, by which means a limb was sometimes dislocated.

STRATEGY, that branch of the military science which teaches how to conduct a body of troops in a course of operations against a contending enemy.

STRATIFICA'TION, in mineralogy and geology, a term signifying the process by which substances in the earth have been formed into strata or layers. Also, in chemistry, layers of different substances placed one upon another in a crucible.

STRATOC'RACY, a military government, or that form of government in which the soldiery bear the sway.

STRA'TUM (plu. *strata*), in geology, a

bed or layer of any species of earth, sand, coal, or other fossil, arranged in a flat form, distinct from the adjacent matter. On digging below the earth, it is found that wherever it has not been disturbed before, the laws of nature have composed it, not of a homogenous or similar mass, but of strata, layers, or stripes of different materials. The arrangement and nature of these materials are in the most extreme degree irregular. Naturalists formerly maintained that each bed or stratum of rock is extended universally over the globe, and that the series of beds, in regular succession, environ our planet, like the coat of an onion; whereas, many beds of rock which are common in one country, are entirely wanting in another: but, taken as an illustration of the structure of the crust of our globe over a limited extent, the successive coats of an onion, if they were of different colours, might not inaptly represent the strata that cover certain districts. De Luc, Dolomieu, and Cuvier unite in the opinion, that the phenomena exhibited by the earth, particularly the alternate deposits of terrestrial and marine productions, can only be satisfactorily accounted for by a series of revolutions similar to the deluge.

STRAW'BERRY, in botany, a plant and its fruit of the genus *Fragaria*, of many varieties, all of which are delicious and cooling.

STREAM, a current of water or other fluid, as a river, brook, or rivulet; a *stream* of lead or iron flowing from a furnace; or a *stream* of lava from a volcano.

STREAM-TIN, in mineralogy, particles or masses of tin found beneath the surface of alluvial ground.

STRENGTH, the power with which bodies can overcome other power, as a lever, or an animal, in regard to its muscles, which set themselves like a lever, and act and re-act from one part of the body to another, the action commencing against the ground, or some body connected with the ground.——The word *strength* also implies power of the mind or intellectual force.——In literature, nervous diction. The strength of words, of style, of expression, and the like, consists in the full and forcible exhibition of ideas, by which a sensible or deep impression is made on the mind of a hearer or reader.——The amount of force, military or naval.——Also, legal or moral force; as, "the *strength* of law;" "the *strength* of public opinion," &c.

STREPITO'SO, in music, an Italian word denoting that the part to which it is prefixed must be performed in an impetuous and boisterous style.

STRI'Æ, in architecture, the fillets which separate the furrows or grooves of fluted columns.——*Striæ*, in natural history, small channels in the shells of cockles and other substances.

STRI'ATED, in botany, streaked, or scored with superficial or very slender lines.——*Striated fracture*, in mineralogy, consists of long, narrow, separable parts laid on or beside each other.

STRI'DOR DEN'TIUM, a grinding of the teeth.

STRIX, in ornithology, a genus of birds of the order *Accipitres;* well-known as the owl. [See Owl.]

STROB'IL, in botany, a pericarp formed from an ament by the hardening of the scales. It is made up of scales that are imbricate, as the cone of a pine.——*Strobiliform*, shaped like a strobil, as a spike.

STROM'BITE, in the history of fossils, a petrified shell of the genus *Strombus*.

STRON'TIANITE, in mineralogy, prismatic barytes, or carbonate of strontian, a mineral that occurs massive, fibrous, stellated, and crystalized in the form of a hexahedral prism, modified on the edges, or terminated by a a pyramid.

STRON'TIAN, in mineralogy, an earth which, when pure and dry, is perfectly white, and resembles barytes in many of its properties. It is a compound of oxygen and a base to which is given the name *strontium*, in the proportion of 16 per cent. of the former, to 84 per cent. of the latter.

STRO'PHE, in Greek poetry, a stanza: the first member of a poem. This is succeeded by a similar stanza called *antistrophe*.

STRUC'TURE, in its usual acceptation, a building of some size and importance. Also, form or construction; as, "we know but little of the *structure* and constitution of the terraqueous globe."——In mineralogy, the particular arrangement of the integrant particles or molecules of a mineral.

STRU'MA, in medicine, glandular tumours on the neck and throat, constituting the scrofula.

STRUTHIO, in ornithology, a genus of birds, order *Gallinæ;* well-known as the ostrich. [See Ostrich.]

STRYCH'NIA, in chemistry, an alkaline substance obtained from the fruit of the *Strychnos nux vomica*, and *Strychnos ignatia*. It is a white substance, crystalized in very small four-sided prisms, and excessively bitter. It acts upon the stomach with violent energy, inducing locked-jaw and destroying life.

STUC'CO, in building, a fine kind of plaster composed of lime, sand, whiting, and pulverized marble; used for covering walls, &c.

STUD, in building, a small piece of timber or joist inserted in the sills and beams, between the posts, to support the beams or other main timbers.——A *stud* is also an ornamental knob; as, "coral clasps and amber *studs*." Hence we use the word figuratively in the description of scenery; as, "the sloping sides and summits of the hills were *studded* with neat cottages and elegant villas."——A collection of breeding horses and mares.

STUD'DING-SAIL, in navigation, a sail that is set beyond the skirts of the principal sails. The studding-sails are set only when the wind is light; and appear like wings in the yard-arms.

STUD'Y, application of the mind to books, to art or science, or to any subject,

ONE HORSE WITH 300 LBS. WILL ASCEND WITH GREATER SPEED THAN ONE MAN, WITH 56 LBS.

HUMAN LABOUR EMPLOYED IN TURNING A WHEEL, IS TO THAT OF ROWING A BOAT, AS THE NUMBER 167 IS TO 248.

for the purpose of learning what was not before known; the occupation of a *student*. Also, the apartment devoted to study or literary avocations.

STUFF, in commerce, a general name for all kinds of fabrics of silk, wool, hair, cotton, or thread, manufactured on the loom. It comprehends all cloths, but it signifies particularly woollen cloth of slight texture for linings.

STURGEON *(sturio)*, in ichthyology, a large fish of the genus *Accipenser*, with the body armed with rough tubercles. The sturgeon grows to sixteen or eighteen feet in length; though they are generally caught much smaller. There are four cirri at the extremity of the under jaw; the eyes are large, and stand at a great distance from the extremity of the snout; and the spinose tubercles, of which there are several series or rows, are very singular. The flesh is much esteemed: from the roe is made *caviare*, and from the sounds and muscular parts is made *isinglass*. [See FISHERIES.]

STYLE, in literature, a term originally used metaphorically, from the *stylus* or antique pen, to signify the writing. Thus we say, "the *style* of Gibbon," in the same sense as "the *pencil* of Guido," meaning in both cases the manner, and applying the name of the instrument to the work. *Style*, then, is the choice and arrangement of words, or the manner in which a person expresses himself in writing. Although in a language there can be but one syntax, there may be many kinds of style, and all equally good. Syntax may be taught by rules, but style must be the gift of nature, assisted by observation; it depends upon the habitual character of the writer, or the temporary one which he assumes for a particular subject. Swift says, "proper words in proper places make the true definition of style."——*Style*, in chronology, the manner of computing time, with regard to the Julian or Gregorian calendar, and termed either *old* style or *new*. By the *old style* the year consisted of 365 days and 6 hours; but the new or Gregorian style was made to correspond more nearly with the period of the sun's revolution, reckoning the year to be 365 days 5 hours 49 minutes 20 seconds, by retrenching 11 days from the old style. The *new style* was introduced into Germany in 1700, and in 1752 into England by act of parliament, whereby the 2nd of September in that year was reckoned the 14th.——*Style*, in architecture, a particular mode of erecting buildings, as the Gothic style, the Saxon style, the Norman style, &c.——In botany, the middle portion of the pistil, connecting the stigma with the germ. The *styles* of plants are capillary, filiform, cylindric, subulate, or clavate.——The word *style* has also other applications: as, "the dinner was served up in excellent *style*;" "the emperor of Russia is *styled* autocrat," &c.

STYLITES, in ecclesiastical history, a sect of solitaries, or fanatics, in the East, who performed a kind of penance by standing motionless on columns or pillars; and of whose performances in this way the most incredible stories are vouched for.

STYLOGLOSSUS, in anatomy, a muscle arising from the apex of the styloid process, and which, descending obliquely to the side and root of the tongue, moves it sideways, backwards and forwards.

STYLO-HYOIDEUS, in anatomy, a pair of muscles arising in the styloid process, and terminating in the horn and the base: this is often perforated by the digastric muscle of the jaw. These muscles draw laterally upwards.

STYLOID, having some resemblance to a style or pen; as the *styloid* process of the temporal bone.

STYPTICS, medicines which have the quality of stopping hemorrhage, or discharges of blood. The word *styptic*, though signifying nearly the same as *astringent*, is used in a different and more limited sense; *astringents* usually denoting internal applications for stopping bleeding, or for strengthening the solids; *styptics*, external applications for restraining discharges of blood.

STYRAX, in botany, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*. Plants of this genus, which are trees, and distinguished in English by the name of *Storax*, yield a resinous gum, as the Benzoin Storax, or Benjamin-tree.

SUB, a Latin preposition for *under* or *below;* used as a prefix to many English words denoting inferiority of rank or defect in quality; as, subaltern, subordinate, &c.

SUBAH, in India, a province or viceroyship. Hence *subahdar*, the governor of a province. *Subahdar* is also used for a native of India, who ranks as captain in the European companies.

SUBALTERN, a term for a military officer below the rank of captain.

SUBAXILLARY, in botany, placed under the angle formed by the branch of a plant with the stem, or by a leaf with the branch.

SUBCLAVIAN, in anatomy, an epithet applied to anything under the arm-pit or shoulder, whether artery, nerve, vein, or muscle.

SUBCONTRARY, in geometry, a term used when two similar triangles are so placed as to have a common angle at their vertex, and yet their bases not parallel.

SUBCORDATE, in botany, somewhat similar to a heart in shape.

SUBCOSTAL, in anatomy, a term for the internal intercostal muscles.

SUBCUTICULAR, in anatomy, being under the cuticle or scarf-skin.

SUB-DOMINANT, in music, the fourth note above the tonic, being under the dominant.

SUBEROSE, in botany, having the appearance of being gnawed or a little eaten.

SUBEROUS, soft and elastic, like cork.

SUBHYDROSULPHURET, in chemistry, a compound of sulphuretted hydrogen with a base, in a less proportion than in hydrosulphuret.

SUBINFEUDATION, in law, the act of

STURGEON IS VERY PLENTIFUL IN THE NORTH AMERICAN RIVERS, AND ON THE SOUTHERN SHORES OF THE BALTIC.

THE CONSUMPTION OF FISH IN RUSSIA IS IMMENSE, OWING TO THE NUMEROUS FASTS OBSERVED IN THE GREEK CHURCH.

enfeoffing by a tenant or feoffee, who holds lands of the crown.

SUB'JECT, one that owes allegiance to a sovereign, and is governed by his laws. Men in free governments are *subjects* as well as *citizens;* as citizens, they enjoy rights and franchises; as subjects, they are bound to obey the laws.——*Subject*, that on which any mental operation is performed, or which is treated or discussed; as, the question of immediate war with France was the *subject* of debate.——Also, that on which any physical operation is performed; as, a *subject* for dissection, or amputation.

SUBJUNCTIVE MOOD, in grammar, a form of the verb which mentions a thing *conditionally* or by way of *supposition;* and is denoted in the English language by the addition of *if, though*, or some other conjunction, expressed or understood.

SUB'LANATE, in botany, an epithet applied to the leaves or stalks of plants which are somewhat woolly.

SUBLAPSA'RIAN, in theology, one who maintains that the sin of Adam's apostacy being imputed to all his posterity, God in compassion decreed to send his Son to rescue a great number from their lost state, and to accept of his obedience and death on their account. The word *sublapsarian* is opposed to *supralapsarian.*

SUB'LIMATE, in chemistry, any substance procured by the process of sublimation, particularly *corrosive sublimate*, or the muriate of mercury, an extremely acrid and violently poisonous preparation.——*Sublimation*, the process by which volatile substances are raised by heat, and again condensed in the solid form. Sublimation bears the same relation to a solid, that distillation does to a liquid. If the subliming matter concretes into a solid hard mass, it is commonly called a *sublimate;* if into a powdery form, *flowers.*

SUBLI'ME, in literature, that style or manner of writing in which a sublime thought, or a fact sublime in its character, is suitably presented to the mind. It has often been said,—but we suspect there is no valid ground for the assertion,—that when men grow philosophical, they can seldom excel in the *sublime.* The sources of the *sublime* in language are well enumerated by Longinus. The first is elevation of mind; the second, ardent sensibility; the third, the proper use of figures; the fourth, grandeur of diction; and the fifth, a dignified harmony of arrangement. The *sublime* in narration is exemplified in the well-known commencement of the book of Genesis: "God said, let there be light, and there was light."

SUBLI'MED, in chemistry, brought into a state of vapour by heat, and then condensed by cold, as a solid substance.

SUBLIMITY, in oratory and composition, loftiness of sentiment or style. Also, moral grandeur; as, "the incomprehensible *sublimity* of God."

SUBLIN'GUAL, in anatomy, situated under the tongue; as the *sublingual glands*, which secrete the saliva.

SUBLUXA'TION, in surgery, a violent sprain or incomplete dislocation.

SUBMARI'NE, an epithet for what exists or happens under the sea or water; as, a *submarine* explosion, or *submarine* navigation, &c.

SUBMAX'ILLARY, in anatomy, an epithet for two salivary glands, situated immediately within the right and left angles of the lower jaw.

SUBME'DIANT, in music, the sixth note, or middle note between the octave and subdominant.

SUBMUL'TIPLE, a number or quantity contained in another number or quantity, a certain number of times; as 4, which is the submultiple of 24, being contained in it six times.

SUBNU'DE, in botany, an epithet for a plant almost naked or bare of leaves.

SUBOCCIP'ITAL, in anatomy, under the occiput; as, the *suboccipital nerves.*

SUBORNA'TION, in law, the crime of procuring a person to take such a false oath as constitutes perjury.

SUBPET'IOLATE, in botany, having a very short petiole.

SUBPŒ'NA, in law, a writ commanding the attendance in court of the person on whom it is served; as witnesses, &c.

SUBREPTION, the act of obtaining a favour by surprise or unfair representation, that is, by the suppression of facts.

SUBROGATION, in the civil law, the substituting of one person in the place of another, and giving him his rights.

SUB'SALT, in chemistry, a salt with less acid than is sufficient to neutralize its radicals.

SUBSCAP'ULAR, in anatomy, an epithet for an artery. The *subscapular artery* is the large branch of the axillary artery, which rises near the lowest margin of the scapula.

SUBSCRIP'TION, the act of signing or setting one's hand to a paper. Also the giving a sum of money, or engaging to give it, for the furtherance of some common object in which several are interested, as subscriptions in support of charitable institutions, and the like.

SUBSES'SILE, in botany, almost sessile; having very short footstalks.

SUB'SIDY, an aid or tax granted to the king, by parliament, upon any urgent occasion, and levied on every subject of ability, according to a certain rate on lands and goods: but the word, in some of our statutes, is confounded with that of customs. It signifies, in modern usage, a sum of money given by the government of one nation to that of another, for the immediate purpose of serving the latter, and the ultimate one, of benefiting the former. Thus Great Britain *subsidized* Austria and Prussia, to engage those powers in resisting the progress of the French during the late war.

SUB'SOIL, the bed or stratum of earth which lies between the surface-soil and the base on which it rests; the *substratum.*

SUB'STANCE, something that we conceive to subsist of itself, independently of

THE BEAUTY OF SOME "SUBLIMATES" CONSISTS IN THEIR BEING COMPOSED OF VERY FINE LIGHT PARTS, SUCH AS THOSE CALLED "FLOWERS."

"SUBSCRIPTION," IN THE BOOK TRADE, IS A RECIPROCAL OBLIGATION TO DELIVER AND RECEIVE NEW WORKS ON CERTAIN TERMS.

any created being, or any particular mode or accident. Our ideas of substances, as Mr. Locke observes, are only such combinations of simple ideas as are taken to represent distinct things subsisting by themselves, in which the confused idea of substance is always the chief. Thus the combination of the ideas of a certain figure, with the powers of motion, thought, and reasoning joined to the substance, make the ordinary idea of a man: and thus the mind observing several simple ideas to go constantly together, which being presumed to belong to one thing, or to be united in one subject, are called by one name, which we are apt afterwards to talk of, and consider, as one simple idea. The word is equally applicable to matter or spirit: we say, "stone is a hard *substance;*" "the soul of man is an immaterial *substance*, endued with thought;" and, "in a good epitome, we may have the *substance* of a large book," &c.

SUB'STANTIVE, in grammar, a noun or name, denoting a thing without any regard to its qualities; as, on the other hand, an adjective is the name of a quality. Thus of the words "red house," the first denotes a quality, and is therefore an adjective; the second a thing, and is therefore a substantive.

SUB'STITUTE, in law, one delegated to act for another.——In the militia, one engaged to serve in the room of another.

SUBSTRAC'TION (not *subtraction*, a rule in arithmetic, &c.), in law, the withdrawing or withholding of some right. Thus the *substraction* of a legacy, is the withholding or detaining of it from the legatee by the executor: and in like manner, the withholding of any service, rent, duty, or custom, is a *substraction*, for which the law gives a remedy.

SUBSTRA'TUM, in geology, a layer of earth laid under another.——In metaphysics, the matter or substance supposed to furnish the basis in which the perceptible qualities inhere.

SUB'STYLE, in dialling, the line on which the gnomon stands.

SUBSULPH'ATE, in chemistry, a sulphate with an excess of the base.

SUBSUL'TUS, in medicine, a twitching or convulsive motion; as *subsultus tendinum*.

SUBTAN'GENT, in geometry, the part of the axis contained between the ordinate and tangent drawn to the same point in a curve.

SUBTEN'SE OF AN ARC, a right line opposite to an angle, supposed to be drawn between the two extremities of the arc.

SUB'TILE, in physics, an epithet for whatever is extremely fine and delicate; such as the animal spirits, the effluvia of odorous bodies, &c. are supposed to be.——*Subtilization*, in the laboratory, the operation of making so volatile as to rise in steam or vapour.

SUBTRACTION, in arithmetic, the taking of a less number from a greater of the same kind or denomination; an operation by which is found the difference between two sums.

SUBTRAHEND', in arithmetic, the sum or number to be subtracted or taken from another.

SUB'ULATE, or SUB'ULATED, in botany, in the shape of an awl: thus, a *subulated leaf* is one of an oblong and narrow figure, broadest at the base, and thence gradually decreasing till it terminates in a point.

SUB'URBS, the buildings, streets, or parts that lie without the walls, but in the immediate vicinity of a city. Hence *suburban*, inhabiting or being situated near a city.

SUCCEDA'NEUM, that which is used for something else; a substitute. Hence *succedaneous*, being employed for or supplying the place of something else.

SUCCIF'EROUS, in botany, producing or conveying sap.

SUC'CINATE, in chemistry, a salt formed by the succinic acid and a base.

SUCCIN'IC ACID, in chemistry, an acid drawn from amber by sublimation.

SUC'CINITE, a mineral of an amber colour, considered as a variety of garnet. It frequently occurs in globular or granular masses, about the size of a pea.

SUCCI'NUM, a genus of minerals. [See AMBER.]

SUC'CORY, in botany, the wild endive, a plant of the genus *Cichorium*.

SUC'COTASH, a dish so called in America, which consists of a mixture of green maize and beans boiled.

SUC'CULENT, in botany, an epithet for such plants as have a juicy and soft stem, as distinguished from such as are hard and ligneous. Peas, beans, &c. are *succulent*.

SUCCULEN'TÆ, the 13th Linnæan natural order of plants, consisting of flat, juicy evergreens.

SUC'CUS, in medicine, a term frequently employed to denote the extracted juice of different plants, as the *Succus Glycorrhizæ*, Spanish liquorice, &c.

SUCCUS'SION, in medicine, a shaking of the nervous parts by powerful stimulants.

SUCK'ER, the piston of a pump; also a piece of leather laid wet upon a stone, which, owing to the pressure of the atmosphere, adheres very closely, and is not to be pulled off without great force.——*Sucker*, in botany, a young twig shooting from the stock or lower part of the stem.

SUCK'ING-FISH, in ichthyology, a fish having a fat naked head and a naked body, which adheres very firmly to the bottom and sides of vessels. It was called by the ancients *remora*, and in the Linnæan system *Echineis remora*.

SUC'TION, in hydraulics, the act of sucking or drawing up a fluid. Suction appears to be performed by a kind of attraction, as if the air and water hung together; whereas the phenomenon is produced merely by taking away the weight or pressure of the air from the surface of the liquid in the pipe, and the pressure of the air on the liquid on the outside of the pipe forces it up into the pipe, to produce an equilibrium.

SU'DOR AN'GLICUS, in medicine, an endemic fever, formerly known by the name of the *sweating sickness* of England. This disorder was thus named from its first appearing in this island, and acquired the title of *sudor*, from the patient suddenly breaking out into a profuse sweat, which forms its great characteristic feature.

SUDORIF'ICS, medicines which promote sweat or sensible perspiration.

SUE, to institute legal process against a person; to prosecute in a civil action for the recovery of a real or supposed right; as to *sue* for debt or damages.

SUF'FERANCE, a term in law, applied to tenants; a tenant at *sufferance* being one that continues after his title ceases, without positive leave of the owner.

SUF'FRAGAN, in ecclesiastical polity, a term of relation applied to a bishop, with respect to the archbishop who is his superior; or rather, an assistant bishop.

SUF'FRAGE, a vote given in deciding a controverted question, or in the choice of a man for an office or trust; as, a true patriot deserves the *suffrages* of his fellow-citizens.

SUFFRUTICOUS, in botany, an epithet for plants which are permanent or woody at the base, but whose yearly branches decay; as sage, thyme, &c.

SUGAR, the sweet constituent of vegetable and animal products. It is a well-known substance, derived chiefly from the juice of a kind of cane (*arundo saccharifera*), growing in the East and West Indies. The *sugar-cane*, which resembles the reeds common in morasses, except that its skin is soft and its pulp a spongeous substance, usually grows to the height of about five or six feet, with a diameter of half an inch. It is divided by knots, at the distance of eighteen inches from each other. At its top, it protrudes several long, green leaves; and in the centre of these is its flower. When the leaves springing from the knots decay, the plant is ripe. It is then cut, stripped of its leaves, and carried to the mills; which consist of wooden rollers covered with steel plates, and are kept in motion by water, wind, or animal power. The juice pressed from the canes passes through a tube into the sugar-house, where it falls into a vessel by which it is conveyed into the first boiler. Here it is simmered over a slow fire, and mixed with potash and quick lime; and by the action of the heat, and the assistance of these ingredients, its unctuous parts are raised to its surface, in the form of a thick scum, which is carefully removed. In a second boiler, over a stronger fire, it is made to boil, and its purification continued by means of a fresh lye. After passing through three other boilers it arrives at the sixth, diminished in quantity to the degree of two-thirds, and in the state of a sirup. Finally, as the liquor cools, the sugar separates from the molasses or sirup in grains; and this being drained off, it leaves the sugar in the state known in commerce by the name of *raw* or *muscovado* sugar. This is farther purified by means of clay, or more extensively by bullock's blood, which forming a coagulum, envelopes the impurities. Thus clarified, it takes the names of *lump*, *loaf*, *refined*, &c. according to the different degrees of purification. Loaf or lump sugar is unknown in the East, sugar-candy being the only species of refined sugar that is made use of in India, China, &c., where the manufacture of that article is carried on to a very great extent. When of the best description, it is in large white crystals, and is as agreeable to the eye as to the taste.—Sugar is a *proximate* element of the vegetable kingdom, and is found in most ripe fruits, and many farinaceous roots. By fermentation, sugar is converted into alcohol, and hence forms the basis of those substances which are used for making intoxicating liquors, as molasses, grapes, apples, malt, &c. The *ultimate* elements of sugar are oxygen, carbon, and hydrogen. Of all vegetable principles, it is considered by many of the most eminent physicians as the most wholesome and nutritious.——*Beet-root sugar.* The cultivation of beet-root, and the manufacture of sugar from it, are making rapid progress on the continent. In Bohemia the population scarcely amounts to 3,300,000 souls, yet there are 87 manufactories in full work, and many more ready to commence. The soil and climate are said to be peculiarly favourable to the growth of this valuable plant. It appears that in France more than 100,000,000 francs are invested in nearly 600 beet-root sugar manufactories; and Louis Philippe has declared, that he by no means despairs of soon seeing persons in France make their own sugar, as in England people brew their own beer. So long since as the year 1830 there were in that country upwards of 100 manufactories of beet-root sugar, from which were produced, in 1829, upwards of 5000 tons of sugar worth 60*l.* per ton, or 300,000*l.*: the profit of which was estimated at 15*l.* per acre; but, it is expected that sugar may thus be made in France at 30*l.* per ton, or 24*l.* per acre profit. The proportion appears to be about two pounds and four-fifths of a pound of the finest white refined sugar from each hundred pounds weight of raw beet-roots. The beet is the same plant which is in England called mangel-wurzel; the white variety being considered the most productive of sugar.——*Maple sugar.* The sugar maple (*Acer saccharinum*) grows in many parts of North America, and the extraction of sugar from it is a great resource to the inhabitants who live far inland, and as a branch of rural economy is extensively practised. The whole process is very simple. The trees are bored obliquely from below upwards, at 18 or 20 inches above the ground, care being taken that the auger penetrates no more than half an inch into the alburnum, or white bark; as a greater discharge takes place at that depth than any other. The liquor is then boiled, and the evaporation urged by an active fire, with careful skimming during the boiling; and the pot is continually replenished with more sap, till a large body has assumed a sirupy consistence. It is afterwards strain-

ed, and boiled again over a very brisk fire, till it has acquired the requisite consistence for being poured into the troughs prepared to receive it. Maple sugar is of quite as pleasant a flavour as cane sugar, sweetens as well, and, when refined, is equally as pure.

SUGAR-CANDY, sugar clarified, and concreted or crystalized, in which state it becomes transparent.

SUICIDE, the crime of self-murder. Although the practice of self-annihilation, under particular circumstances, was upheld by many of the ancient philosophers, the general lawfulness of suicide was by no means universally received in the ancient pagan world; many of the most considerable names, both Greek and Roman, having expressly declared against that practice. Pythagoras, Socrates, Plato, Tully, have condemned it; even Brutus himself, though he fell by his own hand, yet in his cooler and philosophical hours, wrote a treatise wherein he highly condemned Cato, as being guilty of an act both of impiety and cowardice in destroying himself.—According to our law, to constitute suicide, the person must be of years of discretion and of sound mind.

SUILLUS, in mineralogy, a genus of calcareous earths, consisting of carbonate of lime, carbonic acid, and sulphuretted hydrogen and water.

SUIT, in law, an action or process for the recovery of a right or claim. In England the several *suits* or remedial instruments of justice are distinguished into three kinds, actions personal, real, and mixed. ——In a general sense, *suit* denotes a number of things used together, and in a degree necessary to be united, in order to answer the purpose; as a *suit* of curtains, a *suit* of armour, or a *suit* of clothes. We also use the word when speaking of a number of attendants or followers; as, a nobleman and his *suit*. It is right, however, to state, that custom has now pretty generally established the use of the French word *suite* (pronounced *sweet*) in this last named case. But there was no necessity for it; and as its introduction leads to error, owing to the foreign pronunciation being frequently given to the English word when used in other senses, it is to be regretted that the distinction has ever been made.

SUITOR, in legal phraseology, one who attends a court to prosecute a demand of right in law, as a plaintiff, petitioner or appellant.

SUKOTYRO, in zoology, a genus of animals, class *Mammalia*, order *Bruta*, having a horn on each side near the eyes. The only species is the *Sukotyrus Indicus*, which is represented as being about the size of an ox, with the snout of a hog.

SULCATE, or SULCATED, grooved or scored with deep broad channels longitudinally; as, a *sulcated* stem.

SULPHATES, in chemistry, salts formed by the union of sulphuric acid with different bases; as the sulphate of soda, called Glauber's salts; the sulphate of magnesia, called Epsom salts: also the sulphate of copper, the sulphate of lime, the sulphate of zinc, &c.

SULPHATE OF COPPER, or *Blue Vitriol*, in chemistry, is a salt composed of sulphuric acid and oxyde of copper. But it is also a natural product, in a liquid form, of many copper mines; being the result of the infiltration of water over copper pyrites, which has become oxygenated. This liquid is concentrated by heat in copper vessels, and then left to crystalize. It has a disagreeable metallic taste; and, when swallowed, it causes violent vomiting.

SULPHATE OF IRON. [See COPPERAS.]

SULPHITES, in chemistry, salts formed by the union of sulphurous acid with the different bases.

SULPHUR, in chemistry, a substance (known also by the name of *brimstone*), which, never having been decomposed, is considered as a simple or primary body, and as such ranks among the simple combustibles. Sulphur is hard, brittle, and usually of a yellow colour, without any smell, and of a weak, though perceptible taste. It is dug out of the earth in various places, particularly Italy, Switzerland, and South America. It is one of the ingredients in the composition of gunpowder, and that which occasions it to take fire so readily. A prodigious quantity of sulphur is obtained from Solfatara, in Italy. This volcanic country everywhere exhibits marks of the agency of subterraneous fires; almost all the ground is bare, and white; and is everywhere sensibly warmer than the atmosphere, in the greatest heat of summer. It is impossible not to observe the sulphur, for a sulphurous vapour rises through different apertures, and gives reason to believe that there is a subterraneous fire underneath from which that vapour proceeds. Preparations of sulphur are used in various instances where purification is desired, and their excellence for these purposes consists in their quality of absorbing oxygen. Sulphur has been long an esteemed article in the materia medica; it stimulates the system, promotes insensible perspiration, pervades the whole habit, and manifestly transpires through the pores of the skin, as appears from the sulphurous smell of persons who have taken it, and from silver being stained in their pockets of a blackish colour.——An article in the 'Devonport Telegraph' states, that the recent quarrel with Naples on the subject of the sulphur monopoly, had drawn attention to a fact not generally known, viz. that we have in our own mines, and in vast quantities, a mineral until of late deemed almost worthless, which may be substituted for sulphur at a greatly inferior cost, and thereby enable us to get rid of all dependence upon foreigners for an article of some importance to the manufactures of England. It has been ascertained that *pyrites*, or *mundic*, as it is called in Cornwall, may be successfully used in the alkali manufactures; that it can be raised and exported from Corn-

wall at about 20*s.* per ton, which, allowing for the greater bulk of pyrites required in comparison with sulphur, being at the rate of three tons and a half of the former for one of the latter, (which is 12*l.* per ton), it may be brought into the market for one-third of the price. It further states, that from 6000 to 7000 tons of pyrites had this year (1840) been already shipped off to various parts of the kingdom; and that if the proper measures were adopted, it might be brought into such extensive use as to become a valuable article of merchandize, and would give employment to a vast number of miners and labourers.——*Flowers of sulphur*, as they are called, are formed by subliming purified sulphur with a gentle heat in close rooms, where the sublimed sulphur is collected, though the article met with in general under that name is nothing but sulphur finely powdered.

SUL'PHURET, in chemistry, a combination of sulphur with a metallic, earthy, or alkaline base; as, a *sulphuret* of potash. ——*Sulphuret of iron*, a mineral composed of sulphur and iron, which is found in many parts of the world, and which is also called *pyrites* or fire-stone.

SUL'PHURIC ACID, called also VITRIOLIC ACID, consists of sulphur, which constitutes its basis, and of oxygen. When sulphur is exposed to the temperature of 302°, it takes fire spontaneously, burns with a blue flame, yields a strong odour, and, by combining with oxygen, has a tendency to destroy life by suffocation. This vapour, which is composed of the volatilized particles of sulphur and oxygen, is called *sulphuric acid.*——*Sulphurous acid*, an acid formed by the combination of sulphur with a less degree of oxygen than is requisite to form sulphuric acid.

SUL'PHUROUS ACID GAS, in chemistry, is a perfectly aeriform fluid at the ordinary pressure and temperature of our atmosphere. Its odour is strong and suffocating: it cannot maintain combustion, nor the respiration of animals; and its weight is more than double that of atmospheric air. When a mixture of sulphurous acid gas and oxygen gas is made to pass through an ignited tube, the two gases combine and sulphuric acid is formed.

SU'MACH, in botany, the *Rhus coriaria* of Linnæus, so called on acount of its red berries. This shrub is of considerable value, the powder of the leaves, peduncles, and young branches producing the *sumach* of commerce, much employed in tanning light-coloured leathers. In calico-printing, sumach affords, with a mordant of tin, a yellow colour; with acetate of iron, a gray or black; and with sulphate of zinc, a brownish-yellow. Both the leaves and seeds of the sumach are used in medicine, as astringent and styptic.

SUM'MER, one of the four seasons of the year; beginning, in the northern hemisphere, when the sun enters Cancer, about the 21st of June, and continuing for three months; during which time, the sun being north of the equator, renders this the hottest period of the year. In latitudes south of the equator, just the opposite takes place, or, in other words, it is summer there when it is winter here.

SUM'MONS, in law, a warning or citation to appear in court; or a written notification signed by the proper officer, to be served on a person, warning him to appear in court at a day specified, to answer to the demand of the plaintiff.

SUMP, in metallurgy, a round pit of stone, lined with clay, for receiving the metal on its first fusion.——In mining, a pit sunk below the bottom of the mine.

SUMP'TUARY LAWS, those laws which, in extreme cases, have occasionally been made to restrain or limit the expenses of citizens in apparel, food, furniture, &c. Sumptuary laws are abridgments of liberty, and of very difficult execution. Those of England were repealed by stat. 1 Jac. I. c. 25.

SUN, in astronomy, the magnificent orb which, occupying the centre of our system of worlds, gives light and heat to all the planets. Its light constitutes the day, and the darkness which proceeds from its absence, or the shade of the earth, is the cause of night. This splendid luminary is 1,384,472 times larger than the earth; and it revolves on its axis in 25½ days, with its equator inclined 7° 30′ to the plane of the earth's orbit, its apparent diameter being 32′ 36″ when nearest, and 31′ when farthest off. In a paper on the "Construction of the Heavens," Dr. Herschel says, it is very probable, that the great stratum called the *milky way* is that in which the sun is placed, though perhaps not in the centre of its thickness, but not far from the place where some smaller stratum branches from it. Such a supposition will satisfactorily, and with great simplicity, account for all the phenomena of the milky way, which, according to this hypothesis, is no other than the appearance of the projection of the stars contained in this stratum, and its secondary branch. In another paper on the same subject, he says, that the milky way is a most extensive stratum of stars of various sizes admits no longer of the least doubt; and that our sun is actually one of the heavenly bodies belonging to it is as evident. The time and the direction of the sun's rotation are ascertained by the change of the situation of the spots which are usually visible on his disc, and which some astronomers supposed to be elevations, and others to be excavations in the luminous matter covering the sun's surface. These spots are frequently observed to appear and disappear, and they are, in the meantime, liable to great variations, though they are generally found about the same points of the sun's surface. Dr. Herschel, in an ingenious paper, attributes the spots to the emission of an aeriform fluid, not yet in combustion, which displaces the general luminous atmosphere, and which is afterwards to serve as fuel for supporting the process; hence he supposes the appearance of copious spots to be indicative of the approach of

NATIVE SULPHUR FREQUENTLY OCCURS IN CRYSTALINE MASSES, AND SOMETIMES IN COMPLETE AND REGULAR CRYSTALS.

warm seasons on the surface of the earth, a theory which he has attempted to maintain by historical evidence. The exterior luminous atmosphere has an appearance somewhat mottled; some parts of it, appearing brighter than others, have been called faculæ, but Dr. Herschel distinguishes them by the names of ridges and nodules. These spots are usually surrounded by margins less dark than themselves, which are called shallows, and are considered as parts of an inferior stratum, consisting of opaque clouds, capable of protecting the immediate surface of the sun from the excessive heat produced by combustion in the superior stratum, and perhaps rendering it habitable to animated beings. The following note was made by Sir John Herschel, the son of Dr. Herschel, at Fieldhausen, near Wynberg, at the Cape of Good Hope, during the Spring-equinox of 1837. "The sun at present is, and has long been, affected with a display of spots, extraordinary both in point of number and magnitude, and in every point of view extremely remarkable. They do not, however, appear to have affected its emission of heat; at least, I perceive no marked excess or defect of radiation, as indicated by the actinometer, this year, compared with corresponding seasons of 1834, 1835, and 1836. This instrument puts all such inquiries completely within our power." The sun, then, appears to be an eminently large and lucid planet, evidently the first and only primary one belonging to our system. Its similarity to the other globes of the solar system, with regard to its solidity, its atmosphere, its diversified surface, and its rotation on its axis, has led many to suppose that it is inhabited, as they imagine the rest of the planets are, by beings, whose organs are adapted to the peculiar circumstances of that vast globe.—There are many facts in natural philosophy which show that heat is produced by the sun's rays only when they act on a calorific medium. On the tops of mountains of sufficient height, at the altitude where clouds can seldom reach to shelter them from the direct rays of the sun, we always find regions of ice and snow. Now, if the solar rays themselves conveyed all the heat we find on this globe, it ought to be hottest where their course is the least interrupted. Again, our aeronauts all agree with respect to the coldness of the upper regions of the atmosphere; and since, therefore, even on our earth the heat of the situation depends upon the readiness of the medium to yield to the impression of the solar rays, we have only to admit that on the sun itself, the elastic fluids composing its atmosphere, and the matter on its surface, are of such a nature as not to be capable of any extensive affection of its own rays; and this seems to be proved by the copious emission of them, for if the elastic fluids of the atmosphere, or if the matter contained on the surface of the sun, were of such a nature as to admit of an easy chemical combination with its rays, their emission would be very much impeded. Another well known fact is, that the solar focus of the largest lens thrown into the air, will occasion no sensible heat in the place where it has been kept for a considerable time, although its power of exciting combustion, when proper bodies are exposed, should be sufficient to fuse the most refractory substances. [See Astronomy, Planet, Solar System, &c.]

SUN'DAY, the first day of the week, called also the *Lord's-day*, because it is kept holy in memory of the resurrection of Christ; and the *sabbath-day*, because substituted, in the Christian worship, for the sabbath, or day of rest, in the old dispensation. This substitution was first decreed by Constantine the Great, A. D. 321, before whose time both the old and new sabbath were observed by Christians. [See Sabbath.]

SUN'-FLOWER, a plant of the genus *Helianthus*, so called from its turning to the sun. [See Helianthus.]

SU'PER [Lat.], a prefix used in chemical technology, with many words, denoting an excess of the acid, as *super*sulphate of potash, in which there is an excess of sulphuric acid.

SUPERCAR'GO, a person in a merchant's ship, appointed to manage the sales and superintend all the commercial concerns of the voyage.

SUPEREROGA'TION, in theology, a term applied to such works as a man does which exceed the measure of his duty.

SUPERFI'CIES, the surface, or exterior part of a thing; as the *superficies* of a plane, or of a sphere.

SUPER'FLUA POLYGA'MIA, in botany, the name of the second order in the class *Syngenesia*, in which the florets of the disk are hermaphrodite and fertile, and the florets of the ray also fertile.

SUPERINTEND'ENT, one who has the oversight and charge of something, with the power of direction; as, the *superintendent* of public works, &c.

SUPER'LATIVE, in grammar, expressing the highest or utmost degree. The *superlative degree* of comparison, in adjectives, formed by the termination *est*; as, mean, *meanest*, &c. Also, eminent in the highest degree, or surpassing all other; as, a man of *superlative* worth; a woman of *superlative* beauty.

SUPERNU'MERARY, in military affairs, is an epithet for the officers and non-commissioned officers attached to a regiment for the purpose of supplying the places of such as fall in action, &c.

SUPERPOSI'TION, in geology, a lying or being situated upon or above something; as, the *superposition* of rocks.

SUPERSCAPULA'RIS, in anatomy, a muscle seated upon the scapula or shoulder-blade.

SUPERSE'DEAS, in law, a writ or command to suspend the powers of an officer in certain cases, or to stay proceedings.

SUPERSUL'PHATE, in chemistry, a sulphate with an excess of acid.

SUPERSUL'PHURETTED, in chemistry, combined with an excess of sulphur.

MOTES IN THE SUN-BEAM CONSIST OF CERTAIN ELASTIC VAPOURS WHICH ARE DECOMPOSED BY HEAT, AND FLOAT IN THE AIR.

THE SEEDS OF THE SUN-FLOWER YIELD OIL EQUAL TO THE OLIVE, AND THEY ALSO MAKE EXCELLENT FOOD FOR FATTENING POULTRY

SUPERSTI'TION, a habit of the human mind, attributed to those who are thought to attach religious importance to things of a too trivial nature; or to those who are thought wrong in their ideas of the government of the world, not on the side of excluding supernatural agency, but the reverse. Also, the belief of what is absurd, or belief without evidence.

SUPERSTRUC'TURE, any kind of building raised on a foundation or basis; the word being used to distinguish what is erected on a wall or foundation from the foundation itself.

SUPERTON'IC, in music, the note next above the key-note.

SUPINA'TORS, in anatomy, two muscles of the arm, the one called the *supinator longus*, the other the *supinator brevis*, both serving to turn the palm of the hand upwards.

SUP'PLEMENT, in literature, an addition made to a book or paper, by which it is made more full and complete.——*Supplement of an arc*, in geometry, the number of degrees which it wants of being an entire semi-circle; as a *complement* signifies what an arc wants of being a quadrant.

SUPPORTERS, in heraldry, figures placed by the side of the shield, and appearing to support it. In this country none under the degree of a banneret are allowed the honour of *supporters*, which are restrained to those called the high nobility. In case of marriage of two parties, both of whom are entitled to supporters, one of each may be borne.——*Supporters*, in architecture, images which serve to bear up any part of a building in the place of a column.

SUPPURA'TION, in medicine, the process of generating purulent matter, or of forming pus, as in a wound or abscess. Also, the matter generated by suppuration.

SUPRA-AX'ILLARY, in botany, growing or inserted above the axilla; as a peduncle.

SUPRA-DECOM'POUND, in botany, the term used when a petiole divided several times, connects several leaflets.

SUPRA-FOLIA'CEOUS, in botany, inserted into the stem above the leaf or petiole, as a peduncle or flower.

SUPRALAPSA'RIAN, in theology, one who maintains that God, antecedent to the fall of man, decreed the apostacy and all its consequences, determining to save some and condemn others, and that in all he does he considers his own glory only.

SUPREM'ACY, in English polity, the supreme and undivided authority of the sovereign over all persons and things in this realm, whether spiritual or temporal.——*Oath of supremacy*, in Great Britain, an oath which acknowledges the supremacy of the sovereign in spiritual affairs, and abjures the pretended supremacy of the pope

SUR'CHARGE, in law, any extra charge made by assessors upon such as neglect to make due returns of the taxes to which they are liable.

SURCIN'GLE, the girdle with which clergymen bind their cassocks. Also a girth for horses.

SUR'CULUS, in botany, any little branch or twig; and is applied by Linnæus particularly to a branchlet of the mosses and a shoot of the ferns.

SURD, in arithmetic and algebra, a number or quantity that is incommensurable to unity. *Surds* are *simple* when they consist of one term, and *compound* when they consist of several terms.

SU'RETY, in law, one who enters into a bond or recognizance to answer for another's appearance in court, or for his payment of a debt, or for the performance of some act, and who, in case of the principal debtor's failure, is compellable to pay the debt or damages.

SURF, the swell of the sea which bursts upon the shore, or against any rock that lies near the surface of the sea. A *surge* is a great wave rolling above the general surface of the water.

SUR'GERY, that branch of medical science which consists in the art of curing or alleviating diseases by local and external applications, or of performing surgical operations.

SURMUL'LET, in ichthyology, a fish of the genus *Mullus*, remarkable for the brilliancy of its colours, and for the changes which they undergo as the fish expires.

SUR'NAME, the family name; the name or appellation added to the baptismal or Christian name. Camden derives it from *sur*, as being added over or above the other, in a metaphorical sense only. The most ancient *surnames* were formed by adding the name of the father to that of the son, in which manner were produced several English *surnames*, ending with the word son; thus, *Thomas William's son*, makes *Thomas Williamson*. The feudal system introduced a second description of *surnames*, derived from the names of places; as Sutton, Acton, &c.; and these were originally written with the particle *de* or *of*; as Henry de Sutton. In short, the greater part of surnames originally designated occupation, estate, place of residence, or some particular thing or event that related to the person.

SURREBUTTER, in law, the replication or answer of the plaintiff to the defendant's rebutter.

SURREJOIN'DER, in law, a second defence, as the *replication* is the first, of the plaintiff's declaration in a cause, and is an answer to the rejoinder of the defendant.

SURREN'DER, in law, a deed testifying that the tenant for life or years of lands, &c. yields up his estate to him that has the immediate estate in remainder or reversion.

SUR'ROGATE, in the civil law, a deputy, or person substituted for another. The word is most commonly used as the title of a bishop's chancellor,

SUR'TURBRAND, in natural history, fossil wood, found in great abundance in Iceland. It extends through the whole of the north-western part of the island, and is

THE SUPERSTITION OF PAST AGES GAVE A VALUE TO CHARMS AND AMULETS, TO PROTECT PEOPLE FROM DEMONS AND WITCHCRAFT!

SO PRONE IS IGNORANCE TO SUPERSTITION, THAT THERE IS SCARCELY A PARISH IN BRITAIN WITHOUT ITS HAUNTED HOUSE OR WANDERING GHOST!

IN SUTTEES THE WIDOW IS SOMETIMES LAID IN A CAVITY UNDER HER HUSBAND'S CORPSE; SOMETIMES SHE EMBRACES IT.

evidently a subterranean forest, impregnated with bituminous sap, and compressed by the weight of superincumbent rocks.

SURVEY'ING, the art of measuring land, laying down its dimensions upon paper, and finding its content or area. It is of two kinds, *land surveying* and *marine surveying*, the former having generally in view the measure or contents of certain tracts of land, and the latter the position of beacons, towers, shoals, coasts, &c. Those extensive operations which have for their object the determination of the latitude and longitude of places, and the length of terrestrial arcs in different latitudes, also fall under the general term *surveying*, though they are frequently called *trigonometrical surveys*.

SURVEY'OR, in law, one who views and examines for the purpose of ascertaining the condition, value, and quality of a thing; or who surveys or superintends any business, as the surveyor of the highways, a parochial officer who sees that the roads are kept in repair, &c.

SURVI'VOR, in law, the longest liver of joint-tenants, or of any two persons who have a joint interest in a thing; on which case, if there be only two joint-tenants, upon the death of one, the whole goes to the survivor; and if there be more than two, the part of the deceased is divided among all the survivors.

SUS, in zoology, the generic term for the animal which is well known by the name of the *hog*, being of the class *Mammalia*, order *Belluæ*.

SUSPEN'SION, temporary privation of power, authority, or rights, usually intended as a punishment. A military or naval officer's suspension takes place when he is put under arrest.——In law, prevention or interruption of operation; as the *suspension* of the habeas corpus act.——*Suspension*, in rhetoric, a keeping of the hearer in doubt and in attentive expectation of what is to follow, or what is to be the inference or conclusion from the arguments or observations.——*Suspension bridges*. [See BRIDGE.]——*Suspension of arms*, a short truce agreed on by hostile armies, in order to bury the dead, make proposals for surrender, &c.——*Points of suspension*, in mechanics, those points in the axis or beam of a balance wherein the weights are applied, or from which they are suspended.

SUTTEE', the act of sacrifice to which a Hindoo widow submits, namely, that of immolating herself on the funeral pile of her husband. Though none of the sacred books of the Hindoos absolutely command the *suttee*, they speak of it as highly meritorious, and the means of obtaining eternal beatitude. It is believed also to render the husband and his ancestors happy, and to purify him from all offences, even if he had killed a brahmin. Since the year 1756, when the British power in India became firmly established, upwards of 70,000 Hindoo widows have thus been sacrificed. It is gratifying, however, to add, that this shocking perversion of devotion has at length been abolished; and to lord Bentinck, the governor-general of India, the honour of the abolition is due. Public opinion was greatly divided as to the propriety of our interfering with one of their most solemn religious rites; (as may be gathered from bishop Heber's Narrative); but the humane decision of the governor-general appears to have been received by the people with heartfelt satisfaction. A short time before lord Bentinck's order, a rajah in the hill country, who died, had twenty-eight wives burned with his body!

SUTURE, in anatomy, the union of bones by means of dentiform margins; as, the coronal suture; the sagittal suture, &c.

SWAIN'MOTE, or SWEIN'MOTE, in law, one of the forest courts to be holden before the verderers, as judges, by the steward of the swainmote; the swains, or countrymen, composing the jury.

SWAL'LOW, in ornithology, a migratory bird of the genus *Hirundo*. There are several species, which, though they differ in colour as well as in other respects, are all distinguished by the untiring rapidity of their flight and evolutions. Their feet are short, and the wings remarkably long. In winter they migrate to tropical climates, a few days being sufficient to pass from the arctic to the torrid zone; and it has been found by experiment, that individuals always come back to their former haunts. Among the chief varieties are—1. the light bellied swallow (*hirundo viridis*) of a light, glossy, greenish blue colour above, the lower parts white, and a forked tail: 2. the barn-swallow (*hirundo rufa*), so called from its frequently attaching its nest to the rafters in barns; the upper parts are steel blue, the lower light chesnut, the wings brownish-black, and the tail greatly forked: 3. the purple martin (*hirundo purpurea*), a general favourite, which every where takes up its abode among the habitations of man; its colour is a deep purplish blue, with the wings and tail brownish-black: 4. the bank swallow (*hirundo riparia*), of a dark brown colour, which breeds in holes on the sides of steep banks: 5. the cliff swallow (*hirundo fulva*), distinguished by its even tail: and, 6. the swift, or chimney swallow (*hirundo pelasgia*), which differs widely from the others in its form and manners. The colour is entirely deep sooty brown; the tail is short and rounded, having the shafts extended beyond the vanes, sharp-pointed, strong and elastic, by means of which structure the bird is enabled to rest against perpendicular walls. It is easily distinguished in the air by its short body and long wings, their quick and slight vibration, and its wide, unexpected, diving rapidity of flight. It appears to live in the air more than any other bird, and to perform all functions there, save those of sleeping and incubation. According to the observations of that pleasing naturalist, Mr. White of Selborne, swifts in general feed in a higher district than the other species; a proof that gnats and other insects also abound to a considerable height in

WHEN SWIFTS SETTLE ON THE GROUND THEY CAN HARDLY RISE AGAIN, ON ACCOUNT OF THEIR HAVING SUCH SHORT LEGS AND LONG WINGS.

the air; they also range to vast distances; since locomotion is no labour to them who are endowed with such wonderful powers of wing. Their powers seem to be in proportion to their levers, and their wings are longer in proportion than those of almost any other bird.

SWAMP, wet and spongy land in low situations, but not usually covered with water.

SWAMP-ORE, in mineralogy, an ore of iron found in swamps and morasses, the colour of which is a dark yellowish brown or gray. It is called also bog-ore, or indurated bog iron ore.

SWAN *(cygnus)*, in ornithology, a large aquatic fowl of the genus *Anas*, of two varieties, the wild and the tame. The plumage is of a pure white colour, and its long arching neck gives it a noble appearance. In northern climates, the swans are the ornament of the rivers and lakes, over which they seem to preside, from the majesty, ease, and grace of their movements. They swim rapidly, and their flight is powerful and long continued; they live in society, attain a great age, and make their nests near the margin of the water, upon the ground.

SWIETE'NIA, in botany, a genus of plants, class 10 *Decandria*, order 1 *Monogynia*. The principal species is the *Swietenia mahogoni*, or *Cedrus*, the mahogany-tree.

SWIM'MING, the buoyancy and progressive motion of a body, and particularly of an animal body, in water. A very large proportion of the animal tribes are furnished with a greater or less capacity for swimming. Fishes are wholly adapted to it; amphibious creatures, as much, if not more, than to walking; web-footed birds pass a considerable part of their existence upon the surface of the water, and many of them occasionally make their way beneath it. The same may be said of innumerable species of insects; and all quadrupeds are at least capable of preserving their lives, if accident immerses them in this element, while some resort to it with peculiar readiness. Man alone is incapable of swimming, without learning to do so as an art. The reason of this peculiar inability of the human race is attributed to the construction of the body, and especially of the head, from which results a situation of the centre of gravity wholly different from that in quadrupeds. Of man, the head, with respect to the body, and compared with the heads of other animals, as proportioned to their bodies, is singularly heavy; a quality occasioned by the larger quantity of flesh, bones, and brain with which it is furnished; and the absence of those sinuses or cavities which, like air-bladders, lighten that of other animals. The head of a man, therefore, sinks by its own gravity; and, thus exposing the body to fill with water, causes him to drown. Brutes, on the other hand, are able to keep their nostrils above water with facility, and thus, respiring freely, are, on the principles of statics, out of danger. From these observations it will follow, that the *art of swimming*, which can be acquired by exercise only, chiefly consists in keeping the head above water; and that the hands and feet are to be used as oars and helm, in managing the course of the vessel. To all the advantages of cold bathing, swimming adds many others: it greatly strengthens the abdominal muscles, the muscles of the chest, and the organs of respiration, the spine, neck, and arms. It increases courage, and furnishes an agreeable excitement —the usual attendant of manly and brisk exercise, but peculiarly so of swimming; and it affords us the means of preserving our lives, or those of others, in situations of imminent peril. [See FLOATING.]

SWING'-WHEEL, in a time-piece, the wheel which drives the pendulum. In a watch, or balance-clock, it is called the *crown-wheel*.

SWIV'EL, in gunnery, a small cannon or piece of artillery, carrying a shot of half a pound, fixed on a socket on the top of a ship's side, stem, or bow, or in her tops, in such a manner as to be turned in any direction.——A strong link of iron used in mooring ships, and which permits the bridles to be turned round.——A ring which turns upon a staple.

SWORD-FISH, in ichthyology, a fish of the genus *Xiphias*, the snout or upper jaw of which is shaped like a sword.

SYC'AMORE, in botany, the *Ficus Sycamorus* of Linnæus.

SYC'AMORE-MOTH, in entomology, a large and beautiful moth, so called because its caterpillar feeds on the leaves of the sycamore.

SYC'ITE, or FIG-STONE, a name sometimes given to nodules of flint or pebbles which resemble a fig.

SYC'OPHANT, an obsequious flatterer or parasite. This word was originally used to denote an informer against those who stole figs, or exported them contrary to law. Hence, in time it came to signify a tale-bearer or informer in general; thence a flatterer, deceiver, or parasite.

SYDERA'TION, in botany, the blasting of trees with great heat and drought.

SYL'LABLE, in grammar, a combination of letters uttered by a single effort or impulse of the voice, as *can*; or a single letter, as *o* in *over*. At least one vowel or open sound is essential to the formation of a syllable.

SYL'LABUS, an abstract, or compendium containing the heads of a discourse.

SYLLEP'SIS, in grammar, a figure by which we conceive the sense of words otherwise than the words import, and construe them according to the intention of the author. Also, where two nominative cases singular of different persons are joined to a verb.

SYL'LOGISM, in logic, an argument consisting of three propositions; the two first of which are called the *premises*, and the last the *conclusion*. Syllogisms are nothing more than our reasoning reduced to form and method; and every act of reasoning

THE AMERICAN WILD SWAN BREEDS AND PASSES THE SUMMER IN THE ARCTIC REGIONS, BUT MIGRATES IN WINTER TO TEMPERATE CLIMATES.

THE FAMOUS NEAPOLITAN DIVER, NAMED IL PESCHE, ON ONE OCCASION SWAM FIFTY MILES ON THE CALABRIAN COAST IN TWENTY-FOUR HOURS.

SYMPATHY UNITES MANKIND; FOR EVERY MAN WOULD BE A DISTINCT SPECIES TO HIMSELF WERE THERE NO SYMPATHY AMONG INDIVIDUALS.

implies three several judgments, so every syllogism must include three distinct propositions. Thus, in the following syllogism: —"Every creature possessed of reason and liberty is accountable for his actions;" "Man is a creature possessed of reason and liberty;" "Therefore man is accountable for his actions." These propositions are denominated the major, the minor, and the conclusion.——An *analogical syllogism* founds the conclusion upon similitude; "As the base is to the column, so is justice to the commonwealth: but if the base be withdrawn, the column is overturned; therefore if justice is taken away, the commonwealth is overturned."

SYL'VANITE, in mineralogy, the name for a species of *Tellurium*.

SYM'BOL, the emblem, sign, or representation of some moral quality by the images or properties of natural things; as the lion is a symbol of courage; the lamb a symbol of meekness; two hands joined together, a symbol of union, &c. These, symbols were much used by the ancients in representing their deities, and are still continued in various ways. In the eucharist, the bread and wine are called *symbols* of the body and blood of Christ.——*Symbolical philosophy*, is the philosophy expressed by hieroglyphics.

SYM'PATHY, the quality of being affected by feelings similar to those of another in whose fate we are interested. This kind of *sympathy* is produced through the medium of organic impression, and is a correspondent feeling of pain or regret. Thus we sympathise with our friends in distress. The word *sympathy* is also used, but less correctly, to denote an agreement of affections or inclinations, or a conformity of natural temperament which makes two persons pleased with each other.——In natural history, it means a propension or tendency in things inaminate to unite, or to act on each other; as, the *sympathy* between the loadstone and iron.——In medicine, *sympathy*, or "consent of parts," signifies a correspondence of various parts of the body in similar sensations or affections; or an affection of the whole body or some part of it, in consequence of an injury or disease of another part.——A *sympathetic disease* is one which is produced by a remote cause, as when a fever follows a local injury. In this case, the word is opposed to *idiopathetic*, which denotes either an original disease, or that which is produced by a proximate cause. ——In anatomy, the term *sympathetic* is applied to two nerves (the great intercostal and the facial nerves), from the opinion that their communications are caused by sympathies.

SYM'PHONY, in music, primarily signifies a consonance or harmony of sounds, agreeable to the ear, either vocal or instrumental, or both. Also, an overture or other composition for instruments.

SYM'PHYSIS, in anatomy, the union of bones by cartilage.——In surgery, a coalescence of a natural passage; also, the first intention of cure in a wound.

SYMPHY'TUM, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The species are perennials, consisting of the different kinds of comfrey.

SYMPO'SIARCH, among the ancients, was the director and manager of an entertainment. This office was sometimes performed by the person at whose expense the feast was provided, and sometimes by the person whom he thought fit to nominate. The feasts of the ancients were called *Symposia*; hence the name.

SYMP'TOM, in medicine, any appearance in a disease, which serves to indicate or point out its cause, approach, duration, event, &c. Particular symptoms which more uniformly accompany a morbid state of the body, and are characteristic of it, are called *pathogonomic* or *diagnostic* symptoms. In a strict sense, however, *symptom* means no more than the consequences of diseases, and of their causes, exclusive of the diseases and causes themselves.——A *symptomatic* disease is one which proceeds from some prior disorder; as a symptomatic fever, proceeding from local pain or local inflammation. It is opposed to *idiopathic*.

SYMPTOMATOL'OGY, that part of the science of medicine which treats of the symptoms of diseases.

SYNÆ'RESIS, the shortening of a word by the omission of a letter, as *ne'er* for *never*.

SYN'AGOGUE, the building appropriated to the religious worship of the Jews; or the congregation who therein assemble for the performance of their religious rites.

SYN'AGRIS, in ichthyology, a fish with a sharp back, reckoned a species of *Sparus*. It is caught in the Archipelago.

SYNALŒ'PHA, in grammar, a contraction of syllables, performed principally by suppressing some vowel or diphthong at the end of a word, before another vowel or diphthong at the beginning of the next: as, *ill' ego*, for *ille ego*.

SYNARTHRO'SIS, in anatomy, a species of articulation, where there is only an obscure motion, as in the bones of the carpus and metacarpus, &c.; or where there is no motion at all, as in the sutures of the skull.

SYN'CHISIS, in rhetoric, a confused and disorderly placing of words in a sentence.

SYNCHONDRO'SIS, in anatomy, a species of *symphysis*; being the union of two bones by means of a cartilage, as in the vertebræ.

SYN'CHRISIS, in rhetoric, a figure of speech in which opposite persons or things are compared.

SYN'DESMUS, in anatomy, a ligament for binding together the bones and other parts.

SYN'DICI, in antiquity, orators appointed by the Athenians to plead in behalf of any law which was to be enacted or abrogated.

SYNE'CHIA, in medicine, a concretion of the iris of the eye with the cornea, or with the capsule of the crystaline lens.

SYNCHORE'SIS, in rhetoric, a figure of speech wherein an argument is scoffingly

HOWEVER STRIKINGLY A SYMBOL MAY EMBODY AN IDEA, IT IS ALWAYS ATTENDED WITH A LIABILITY TO VARIOUS INTERPRETATIONS.

conceded to, for the purpose of retorting to it more pointedly.

SYN'CHRONISM, in chronology, concurrence of two or more events in time.——*Synchronal*, simultaneous, or happening at the same time.

SYN'COPATE, in a primary sense, to contract, as a word, by taking one or more letters or syllables from the middle.——In music, to prolong a note begun on the unaccented part of a bar, to the accented part of the next bar; or to connect the last note of a bar with the first of the following.

SYN'COPE, in medicine, a swooning, wherein the patient continues without any sensible motion or respiration; accompanied with a suspension of the action of the brain and a temporary loss of sensation and volition.——*Syncope*, in grammar, an elision or retrenchment of a letter or syllable from the middle of a word.——In music, the division of a note introduced when two or more notes of one part answer to a single note of another. The word *syncopation* is, however, more frequently used in music.

SYN'DIC, an officer of government, invested with different powers in different countries; generally a kind of magistrate entrusted with the affairs of a city or community. The university of Cambridge has its *syndics*; and in Paris almost all the companies, the university, &c. have theirs.

SYNEC'DOCHE, in rhetoric, a figure or trope by which the whole of a thing is put for a part, or a part for the whole; as the genus for the species, or the species for the genus, &c.

SYNGENE'SIA, the 19th class of the Linnæan system of plants, containing six orders: 1. *Polygamia æqualis*; 2. *Polygamia superflua*; 3. *Polygamia frustanea*; 4. *Polygamia necessaria*; 5. *Polygamia segregata*; and 6. *Monogamia*; in which the stamens are united in a cylindrical form by the anthers.

SY'NOCHA, in medicine, a species of continued fever, attended with symptoms denoting general inflammation in the system. It makes its attack at all seasons of the year, but is most prevalent in the spring; and it seizes persons of all ages and habits, but more particularly those in the vigour of life, and of a plethoric constitution. It is often brought on by sudden transitions from heat to cold, swallowing cold liquors when the body is much heated by exercise, or by intemperance of any kind.

SY'NOCHUS, in medicine, a species of mixed fever, commencing with symptoms of synocha, and terminating in typhus.

SYN'OD, in ecclesiastical affairs, a council or meeting to consult on matters of religion. In Scotland, a synod is composed of several adjoining presbyteries. The members are the ministers, and a ruling elder from each parish.——*Synod*, in astronomy, a conjunction, or concourse of two or more stars or planets, in the same optical place of the heavens.——*Synodical month*, the period from one conjunction of the moon with the sun to another. This is called also a *lunation*, because in the course of it the moon exhibits all its phases.

SYN'ONYME, or SYN'ONYM, a word having the same signification as some other word. We rarely find two words precisely *synonymous* in all situations; though many are sometimes synonymous, and at other times not so. Thus when we speak of the large rolling swell of the sea, we may call it a *wave*, or a *billow*; but when we speak of the small swell of a pond, we may call it a *wave*, but not a *billow*.

SYNOP'SIS, a collection of things or parts so arranged as to exhibit the whole or the principal parts in a general view.

SYNO'VIA, in anatomy, the fluid which lubricates the articulations of the bones, and which is for that purpose secreted in the cavities of the joints.

SYN'TAX, that division of the grammatical art which analyses the dependence of parts of speech upon one another, and supplies rules for their mutual government. Syntax, as an art, may be divided into two branches: the one common to all languages, and by which words are made to agree in gender, number, case, person, and mood; the other peculiar to each language, and by which one mood is made to govern another, and the consequent variations effected: the first of these is called *concord*; the second *government*. It has been said that the first merit of language is intelligibility; its first grace, purity; and that every other excellence is subordinate. Syntax, then, especially deserves attention: as neither intelligibility nor purity of style can be found where the rules of syntax are violated.

SYN'THESIS, in logic, that process of reasoning in which we advance by a regular chain from principles before established or assumed, and propositions already proved, till we arrive at the conclusion. The *synthetical* is therefore opposed to the *analytical* method.——In chemistry, the uniting of elements into a compound: the opposite of *analysis*, which is the separation of a compound into its constituent parts.——*Synthesis*, in antiquity, a loose robe worn by the Romans at their meals.

SYNTON'IC, in music, an epithet used by ancient musical writers to distinguish a species of the diatonic genus.

SY'PHERING, in ship-building, the lapping the edge of one plank over the edge of another in constructing the bulkheads.

SYR'IAC, pertaining to Syria, or its language; as, the *Syriac* version of the Pentateuch.

SYR'IACISM, or SYR'IANISM, a Syrian idiom, or a peculiarity in the Syrian language.

SYRIN'GA, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. The species are shrubs of the lilac tribe.

SYRINGOT'OMY, in surgery, the operation of cutting for the fistula.

SYSSARCO'SIS, in anatomy, a species of union of bones in which one bone is united to another by means of an intervening muscle.

SYNODICAL EPISTLES ARE CIRCULAR LETTERS WRITTEN BY THE SYNODS TO THE ABSENT PRELATES AND CHURCHES.

IN EVERY LANGUAGE THERE IS SOME FUNDAMENTAL PRINCIPLE, WHICH PERVADES AND REGULATES ITS WHOLE CONSTRUCTION.

SYS'TEM, in science and philosophy, a whole plan or scheme, consisting of many parts connected in such a manner as to create a chain of mutual dependencies; or a regular union of principles or parts forming one entire thing. Thus we say, the planetary *system*, or the whole of the bodies supposed to belong to each other; a *system* of botany, or that which comprehends the whole science of plants; a *system* of philosophy, or a theory or doctrine which embraces the whole of philosophy. The great utility of *systems* is to classify the individual subjects of our knowledge in such a way as to enable us readily to retain and employ them, and at the same time to illustrate each by showing its connexion with all.

SYZ'YGY, in astronomy, a term equally used for the conjunction and opposition of a planet with the sun, or of any two of the heavenly bodies.

SYS'TOLE, in anatomy, the contraction of the ventricles of the heart, for expelling the blood and carrying on the circulation; the opposite state to which is called the *diastole*, or dilatation of the heart.——In grammar, the shortening of a long syllable.

SYS'TYLE, in architecture, the disposition of columns in a building near to each other, but not quite so thick as the *pycnostyle*; the intercolumniation being only two diameters of the column.

SYSY'GIA, in music, any combination of sounds so proportioned to each other as to produce a pleasant effect on the ear.——In grammar, the coupling different feet together in Greek or Latin verse.

T.

T, the twentieth letter and sixteenth consonant in the English alphabet, is numbered among the mutes or close articulations; and it differs from *d* chiefly in its closeness, the strength with which the breath is emitted in pronouncing *t* being all that distinguishes them. Its natural sound is heard in *take, turn, bat, bolt, butter*. Its use is to modify the manner of uttering the vocal sound which precedes or follows it. When *t* is followed by *h*, as in *think* and *that*, the combination forms a distinct sound for which we have no single character: and these sounds differ, *think* being aspirated, and *that* being vocal. Another sound is also produced by its combination with *i*, the letters *ti* usually passing into the sound of *sh*, as in *nation, position, substantiate*, &c. In a few words the combination *ti* has the sound of the English *ch*, as in *Christian*. ——In music, T signifies *tenor*; also *tace*, to indicate silence; it also stands for *trillo*, a shake; and in concertos and symphonies it is likewise the sign of *tutti*, a direction to the whole band to play after a solo.

TABARDEE'RS, a name formerly given to the scholars at Oxford who wore the tabard, a short gown.

TABASHEER', a Persian word signifying a substance found in the joints of the bamboo, which is highly valued in the East Indies as a medicine for the cure of bilious vomitings, and other discharges. It is supposed to be the juice of the plant thickened and hardened, though some describe it as pure silex.

TAB'BY, in commerce, a thick kind of *taffeta*, watered or figured, by means of a calender, the iron or copper rolls of which are engraved. The parts engraved pressing but little, if at all, upon the stuff, occasion that inequality of the surface by which the rays of light are differently reflected.—— *Tabbying*, the passing of silk, mohair, or other stuffs under a calender to give them a wavy appearance.

TAB'ERNACLE, among the Jews, a kind of tent or movable building, placed in the middle of the camp, for the performance of religious worship, sacrifices, &c. during the wanderings of the Israelites in the wilderness; and made use of for the same purpose till the building of the temple of Jerusalem. It was of a rectangular figure, thirty cubits long, ten broad, and ten high.——*The Feast of Tabernacles*, a solemn festival of the Jews, observed after harvest, on the fifteenth day of the month Tisri; instituted to commemorate the goodness of God, who protected them in the wilderness.——*Tabernacle* is also used to signify the box in which the Host is kept on the altar in Roman churches, and for the niche or cabinet in which the sacred relics, images, &c. are preserved.

TA'BES, in medicine, a wasting of the body, a genus of diseases, class *cachexia*.

TABLE, in mathematics, systems of numbers calculated for expediting astronomical, geometrical, and other operations: thus we say, *tables* of the stars; *tables* of sines, tangents, and secants; *tables* of logarithms, rhombs, &c.——In literature, a collection of heads or principal matters contained in a book, with references to the pages where each may be found; as, a *table* of contents. ——*Table*, in perspective, the transparent or perspective plane.——In arithmetic, any series of numbers formed so as to expedite calculations, as the tables of weights and measures.——In astronomy, computations of the motions and other phenomena of the heavenly bodies.——In anatomy, a division of the cranium or skull.——In the glass manufacture, a circular sheet of finished glass, usually about four feet in diameter,

THE BEST WAY TO LEARN ANY SCIENCE IS TO BEGIN WITH A REGULAR SYSTEM, AND DRAW UP A SHORT ANALYSIS OF IT.

WE ARE IN THE WORLD LIKE MEN PLAYING AT TABLES; THE CHANCE IS NOT IN OUR POWER, BUT TO PLAY IT, IS; AND WE MUST MANAGE IT AS WE CAN.

weighing 10 or 11lbs. each, twelve of which make a side or crate of glass.——In religion, a division of the ten commandments; as, the first and second *tables*. The first table comprehends our more immediate duties to God; the second table our more immediate duties to each other.——In heraldry, escutcheons containing nothing but the mere colour of the field, and not charged with any bearing, are called *tables d'attente*, tables of expectation, or *tabulæ rasæ*.——Among jewellers, a *table* diamond, or other precious stone, is that whose upper surface is quite flat, and only the sides cut in angles.——Knights of the *round table*, a military order instituted by Arthur, the first king of the Britons, A.D. 516.——*Laws of the twelve tables*, the first set of laws of the Romans, so called, probably, because they were engraved on tables or plates of copper, to be exposed in the most public part of the forum.

TABLEAUX VIVANTS (LIVING PICTURES), groupes of persons, so dressed and placed as to represent paintings. This is a source of refined amusement in Germany and some other parts of the continent, and is thus managed: A frame is made of sufficient width, covered with gauze, behind which the persons stand in appropriate attitudes and costume, either taken from celebrated historical pictures, or left to the genius of the parties who represent a scene from the striking descriptions of a poet or novelist. They are often got up with great taste in families on birth-days and festive occasions, and are sometimes also exhibited on the stage.

TABOO', a word used by the South Sea islanders to denote something consecrated, sacred, and forbidden to be touched, or set aside for particular uses and persons.

TAB'ULAR SPAR, in mineralogy, the schaalstein of Werner, and the prismatic augite of Jameson. It is a species of limestone, of a grayish white colour, whose primary form is regarded as a doubly-oblique prism. Before the blowpipe it melts on the edges into a semi-transparent colourless enamel.

TACAMAHAC'A, or TAC'AMAHAC, in chemistry, a resin obtained from the *Fagara octandra*, and brought from America in large oblong masses wrapped in flag leaves, of a light brown colour, and an aromatic smell between that of lavender and musk.

TA'CES, in archæology, armour for the thigh.

TACK, the course of a ship in regard to the position of her sails; as the starboard *tack*, or larboard *tack*.——*To tack*, to change the course of a ship by shifting the position of the sails from one side to the other.

TAC'KLE, the rigging, blocks, and other apparatus of a ship. Also a machine for raising and lowering heavy weights, consisting of a rope and blocks called a pulley.

TAC'TICS, a term which, in its most extensive sense, relates to those evolutions, manœuvres and positions which constitute the main spring of military and naval finesse: tactics are the means by which discipline is made to support the operations of a campaign, and are studied for the purpose of training all the component parts according to one regular plan or system; whereby celerity, precision, and strength are combined, and the whole rendered effective.

TADOR'NA, in ornithology, the sheldrake, a beautiful species of Anas, nearly equal to the goose in size, and variegated with white, and with a longitudinal spot of gray on the belly: it is frequent on the north-western coasts of England.

TAD'POLE, a young frog, before it has disengaged itself from the membranes that envelope it in its first stage of life, and seeming to consist only of a large head and slender tail.

TÆ'NIA, the *tape-worm*, in natural history, a genus of the *vermes* class, containing more than a hundred species, infesting mammalia, reptiles, and fish. The animals of this genus of worms are destined to feed on the juices of various animals, and are usually found in the alimentary canal, generally at the upper part of it. They are sometimes collected in great numbers, and occasion the most distressing disorders.

TAF'ELSPATH, in mineralogy, a lamellar substance of a yellowish gray or rose-white, forming masses of prisms, chiefly lime and silex.

TAF'FEREL, the upper part of a ship's stern, being a curved piece of wood, generally ornamented with carved work.

TAL'BOT, in sporting, a sort of hunting dog between a hound and a beagle, with a large snout, and long, round, pendulous ears.

TALC, in mineralogy, a well known species of magnesian earth, the colour of which is generally one of the shades of green. It consists of broad laminæ or plates, is soft and unctuous to the touch, has a shining lustre, and is often transparent. The species *talc* comprehends the varieties of pale green, gray, and white varieties, and is divided, in popular language, into *common*, *earthy*, and *indurated* talc. By the action of fire, the laminæ open a little, the fragment swells, and the extremities are with difficulty fused into a white enamel. When rubbed with resin, talc acquires positive electricity. It is found in various parts of the world. In England, Northamptonshire is the district most peculiarly known for this production; and it is met with in the northern parts of Scotland. The Romans used talc both for window-lights, and for the pavement of magnificent buildings; and it is still used in many parts of India and China, in windows instead of glass.

TAL'ENT, among the ancients, the name of a coin, the true value of which cannot well be ascertained, but it is known that it was different among different nations. Among the Hebrews there was both a talent of gold and a talent of silver; the gold coin weighed only four drachmas, and was the same as the shekel of gold: but

CANDLES MADE OF THE VEGETABLE TALLOW ARE FIRMER THAN THOSE MADE OF ANIMAL TALLOW, AND FREE FROM ALL OFFENSIVE SMELL.

their talent of silver, called *cicar*, was equivalent to three thousand shekels, or one hundred and thirteen pounds, ten ounces, troy weight. The *Attic* talent is supposed to have been of the value of 193*l.* 15*s.* sterling. The Romans had the great talent and the little talent; the great talent equal to 99*l.* 6*s.* 8*d.*, and the little talent to 75*l.* sterling.

TA'LES, in law, additional jurymen, when those impanelled do not appear, or, appearing, are challenged.

TAIL, or FEE-TAIL, in law, a limited estate or fee; opposed to fee-simple. [See FEE and ENTAIL.]

TAL'ISMAN, a word of Arabic origin, signifying a figure cast or cut in metal or stone, and made, with certain superstitious ceremonies, during some particular configuration of the heavens, as when planets are in conjunction, and supposed to have extraordinary influence in averting disease. But, in a more extensive sense, the word *talisman* is used to denote any object in nature or art, the presence of which checks the power of spirits or demons, and defends the wearer from their malice.

TAL'LOW, animal fat melted and separated from the fibrous matter mixed with it. It is firm and brittle, has a peculiar odour, and is applied to various uses, but particularly to the manufacture of candles. Tallow consists of carbon and hydrogen, which, when excited into gas by any burning body applied to the wick, absorbs oxygen, and the hydrogen and carbon exploding, as they gradually evolve, the result displays heat, creates a nucleus called flame, and radiates light.

TAL'LOW-TREE *(stillingia sebifera)*, a remarkable tree growing in great plenty in China; so called from its producing a substance like tallow, in every minute particular, and applicable to the same purposes. The tallow-tree is about the height of the cherry; and the foliage greatly resembles the Lombardy poplar, and at the end of the season the leaves turn bright red. The bark is very smooth; the fruit, which is enclosed by a kind of coat resembling that of a chesnut, is composed of three grains, of the size and form of a small nut. The capsules and seeds are crushed together and boiled; the fatty matter is skimmed as it rises, and condenses on cooling: and the candles made of this substance are very white.

TAL'LY, a mode of reckoning between buyers and sellers, which before the use of writing was almost universal, and which is even still partially used. The *tally* is a piece of wood on which notches or scores are cut as marks of number. It is customary for traders to have two of these sticks, or one stick cleft into two parts, and to mark or notch them in a corresponding manner; one to be kept by the seller, the other by the purchaser.——In the English exchequer are tallies of loans, one part being kept in the exchequer, the other being given to the creditor in lieu of an obligation for money lent to government.

TAL'LY TRADE, the name given to a system of retail trade carried on not only in London and other large towns, but spreading over the country to a fearful extent. By this mode of trade shopkeepers furnish certain articles on credit to their customers, the latter agreeing to pay a stipulated sum weekly. A temptation is thus held out to the poorer classes to buy articles which they do not absolutely require; and the natural consequence is, that they get involved in debt with the tally-shops beyond their means of extrication, and eventually pay the penalty of debt (small as it is) within the walls of a prison. It has become an evil of great magnitude, and may be regarded as one of the most direct roads to pauperism.

TAL'MUD, the book of the oral law of the Jews, containing their laws, customs, and traditions. It consists of two general parts, the *Mischna* or text, the style and reasoning of which are tolerably accurate: and the *Gemara* or comment, which contains the decisions of the Jewish doctors, and their expositions of the text. The Talmud of Babylon was composed about 500 years after Christ, and was much esteemed; that of Jerusalem was not held in such great veneration, although composed 200 years earlier.

TAL'ON, in architecture, a kind of moulding, which consists of a cymatium, crowned with a square fillet. It is concave at the bottom, and convex at the top; and is usually called by workmen an *ogee*, or O G.

TAL'PA, in surgery, a name given to encysted tumours, when situated under the scalp.——*Talpa*, in zoology, the mole.

TA'LUS, in fortification, the slope of a work, as a bastion, rampart, or parapet.

TAM'ARIN, in zoology, a small monkey of South America, with large ears.

TAM'ARIND, the fruit of an Indian tree, which has an agreeable acidity combined with sweetness. The tamarind-tree is cultivated in both the Indies, for the sake of its shade as well as for its grateful acid fruit, the pulp of which, mixed with boiled sugar, is imported into Europe. The stem of this tree is large, lofty, and crowned with wide spreading branches.

TAM'BOUR, a species of embroidery wrought on a kind of cushion or spherical body, stretched on a frame, so that it somewhat resembles the head of a drum, or a tambourine. A frame of a different construction is used when several workers are employed on the same fabric, consisting principally of two rollers, which, when properly fixed, stretch the material to the necessary degree of tension. But machines of extraordinary ingenuity have of late years been constructed for tambour-working, by which the greatest accuracy is ensured, while the saving of manual labour places them among those efforts of mechanical skill which are the distinguishing features of the present age.——*Tambour*, in fortification, a kind of work formed of palisades or pieces of wood ten feet long, planted close together, and driven firm into the ground.——*Tambour*,

EAST INDIAN TAMARINDS CAN BE PRESERVED WITHOUT SUGAR, AND CONTAIN MORE ACID THAN ANY OTHER FRUIT IN A NATURAL STATE.

in architecture, is applied to a wall of a circular building, surrounded with columns. ——In mechanics, the cylindrical axle-tree of a wheel, which serves to draw up stones out of a quarry.

TAMBOURI'NE, one of the most ancient musical instruments, and still used, particularly in Biscay, where a large kind of tambourine, called *tambour de Basque*, is used to accompany all the national songs and dances. In Scripture this instrument is designated a *timbrel;* in profane history we find it was popular among most of the Eastern nations; and in the middle ages it was used by the Troubadours and minstrels. The present tambourine consists of a wooden or brazen hoop, over which a skin is extended, and which is hung with bells. Sometimes the thumb of the right hand is drawn in a circle over the skin; sometimes the fingers are struck against it; while it is supported by the thumb of the left hand. From the performance of it being capable of displaying various graceful movements of the body, the tambourine is generally an attribute of Terpsichore.

TAM'POE, an East Indian fruit somewhat resembling an apple.

TAN, the bark of the oak, or other tree ground or chopped, and used in tanning leather. Tan, after being used in tanning, is used in gardening for making hotbeds.

TAN'GENT, in geometry, a straight line which touches a curve, but which, when produced, does not cut it ——In trigonometry, the tangent of an arc, is a right line touching the arc at one extremity, and terminated by a secant passing through the other extremity.

TAN'ISTRY, a tenure of lands in Ireland, by which the proprietor had only a life estate, and to this he was admitted by election. The primitive intention seems to have been that the inheritance should descend to the oldest or most worthy of the blood and name of the deceased; but the practice often gave rise to the fiercest and most sanguinary contests between tribes and families.

TAN'NIN, in chemistry, the astringent vegetable substance procured from tan, by macerating it in cold water; this has the property of forming with animal gelatine a tough insoluble matter, and is therefore used in converting skins into leather by the process of tanning. The oak and its products, gall-nuts, &c. contain two kindred matters, tannin and gallic acid, which seem by the powers of vegetation, mutually convertible. They combine with much facility, forming, from a state of solution, a soft, flocculent precipitate, which, on drying, becomes hard and brittle. On the formation of this combination, the art of tanning depends. The skin of an animal when freed from the hair, epidermis, and cellular fibre, consists chiefly of indurated gelatine. By immersion in the tan-liquor, which is an infusion of bark, the combination of tannin with the organized gelatine, which forms the animal fibre, is slowly established; and the compound of tannin and gelatine not being soluble in water, and not liable to putrefaction, the skin is rendered dense and impermeable, and not subject to the spontaneous change which it would otherwise soon undergo.

TAN'NING, the art or process of preparing leather from the raw hides of animals, by means of tan. After being cleared of the hair, wool, and fleshy parts by the help of lime, scraping, and other means, they are macerated in an astringent liquor, formed from the bark of the oak. This is usually done by putting into the tan-pit layers of ground oak-bark and skins alternately, with the addition of a small quantity of water. This process is long and laborious; but, by accounts which have lately been published, it would appear that a discovery has been made which wonderfully facilitates the operations. By means of a tanning machine, or pair of horizontal rollers fixed over a tan-pit, between which is introduced a bolt or band of hides attached by ligatures to each other, to the number of fifty to a hundred, and by which the rollers are constantly fed or supplied, the hides are lifted out of the pit on one side of the machine; and as they pass between the rollers the exhausted ooze or tanning liquor is pressed out of them, and they are deposited in folds in the pit, on the other side of the machine, where they absorb another supply of fresh ooze. The first hide having been inserted between the rollers, the others follow in succession, and upon arriving at the end of the band the motion of the roller is reversed, and the belt is returned through the machine to receive another pressing. This alternate motion is constantly repeated, the pit being replenished from time to time with fresh solutions of tan, till the operation is completed. The effects said to be produced by this simple plan, are—the shortening the time of tanning to one-fourth of that generally required; and the production of a considerable increase of weight. It must, however, be observed, that tanning is a chemical process, and that improvements in the arts may naturally be expected to result from the progress of chemical science, independent of the mere mechanical operations.

TAN'SY, in botany, a plant of the genus *Tanacetum*, with small yellow flowers, like buttons, disposed in a large upright corymb. The whole plant has a strong and penetrating odour, and an extremely bitter taste. It contains an acrid volatile oil, and is used in medicine as a stimulant and carminative.

TAN'TALITE, in mineralogy, the ore of *tantalum*, otherwise called *columbium*, a newly-discovered metal. It is imbedded in small angular pieces, and is of an iron black colour, sometimes tinged with blue.

TAP'ESTRY, a curious production of the loom, wherein the finest pictures may be represented. It consists of a kind of woven hangings of wool and silk, often enriched with gold and silver, representing figures of men, animals, landscapes, historical subjects, &c. This species of curtain covering

SKINS OF FOUR FOOTED ANIMALS, AND AT THE SAME TIME PRESERVING THEIR PLIABILITY.

TANNIN HAS NEVER BEEN MET WITH IN THE POISONOUS PLANTS, NOR IN SUCH AS CONTAIN ELASTIC, RESINOUS, AND MILKY JUICES.

for walls was known among Eastern nations from a very remote era; but it is supposed that the English and Flemish, who were the first that, in the northern parts of the world, excelled in this art, learned it of the Saracens during the crusades. During the 15th and 16th centuries, the art was practised with great skill at Arras, in Flanders; and tapestries were executed there after the masterly designs of Raphael in his cartoons. It was also carried on in England, and much patronized; but has long since given place to paper and other kinds of decorations. Colbert, the celebrated minister of Louis XIV., established *Gobelin's* celebrated manufactory of tapestry, in the neighbourhood of Paris. [See GOBELINS.]

TAPIO'CA. [See MANIOC and CASSAVA.]

TA'PIR, in zoology, a genus of animals of the class *Mammalia*, order *Belluæ*, that inhabits America. The tapir is a native of South America, is about 6 feet long, and 3½ high, resembling a hog in shape, with a short movable proboscis. It shuns the habitations of man, and leads a solitary life in the interior of forests. In the wild state it lives on fruits and the young branches of trees, but when domesticated, eats every kind of food. Though possessed of great strength, it uses it only for defence; and its disposition is mild and timid. There is also the Indian tapir, which inhabits Sumatra, Malacca, and some of the surrounding countries.

TAR, a thick, black, unctuous substance, obtained from old pines and fir trees. Some of the unctuous species of bitumen are also called *mineral tar*.

TARAN'TULA, in entomology, the largest of all European spiders, the bite of which was formerly supposed to be venomous, and only to be cured by the aid of music.

TARE, in commerce, an allowance for the outside package that contains such goods as cannot be unpacked without detriment; or for paper, bands, cord, &c. When the tare is deducted, the remainder is called the *net* or *neat* weight.

TAR'GUM, in sacred literature, a name given by the Jews to certain glosses and paraphrases of the Scriptures, written in the Chaldaic language; a work which was occasioned by the long captivity of that people.

TAR'IFF, or TAR'IF, in commerce, a list or table of custom-house and excise duties imposed on goods, with their respective rates.

TARPE'IAN, in Roman antiquity, an appellation given to a steep rock in Rome; whence, by the law of the twelve tables, those guilty of certain crimes were precipitated. It was named after Tarpeia, the daughter of Tarpeius, the governor of the citadel of Rome, who promised to open the gates of the city to the Sabines, provided they gave her their gold bracelets, or, as she expressed it, what they carried on their left hands. The Sabines consented, and, as they entered the gates, threw not only their bracelets, but their shields, upon Tarpeia, who was crushed under the weight. She was buried in the capitol.

TAR'RASS, or TER'RAS, in mineralogy, a volcanic earth, resembling puzzolana, used as a cement. The Dutch tarras is made of a soft rock stone found near Collen, on the lower part of the Rhine. It is burnt like lime, and reduced to powder by being ground.

TAR'SUS, in anatomy, the space between the bones of the leg and the metatarsus, the front of which is called the instep.——*Tarsus* is also used by some for the cartilages which terminate the *palpebræ*, or eyelids, and from which the *cilia* or hairs arise.

TAR'TAR, in chemistry, an acid concrete substance formed on the sides of wine casks. It does not appear to be a product of the fermentative process, but exists before this in the juice of the grape, and is merely separated. It is purified by boiling it in water, with the addition of a small quantity of fine clay, which attracts the colouring matter. By evaporation, it is obtained crystalized, forming the purified tartar, crystals, or cream of tartar of the shops. It is a compound of tartaric acid and potash, having the acid in excess. In its crude state, it is much used as a flux in the assaying of ores.

TARTAR'IC ACID, an acid procured by the solution, filtration, and crystalization of the tartar. *Tartaric acid* combines with the alkalies and earths, forming salts named *tartrates*. It has also a tendency to form salts with an excess of acid, in uniting with those bases, with which it forms soluble compounds.——To *tartarize*, to impregnate with, or refine by means of the salt of tartar.——*Cream of tartar*, a powder compounded of tartaric acid and potash.

TAR'TRATES, salts formed by the combination of tartaric acid with different bases; as *tartrate* of potash, *tartrate* of soda, &c.

TASTE, in physiology, one of the five senses; a peculiar sensation excited by means of the organs of taste. The tastes of bodies depend on a certain determinate magnitude of their particles, adapted to excite different sensations by means of the nervous papillæ of the tongue.——*Taste* is also used, in a figurative sense, for the judgment and discernment of the mind, or the faculty of judgment operating in a certain sphere; and is the fruit of observation and reflection—not wholly the gift of nature, nor wholly the effect of art.

TATOO'ING, the practice of puncturing the skin, and rubbing a dye or gunpowder into the wounds, by which means lines and figures are formed on the face or other parts of the body which have been subject to the operation. Degrees of rank among savages are often designated by the greater or less surface of *tatooed* skin; and some of the South Sea islanders have a most grotesque as well as fierce appearance.

TATTOO', the beat of the evening drum,

TARTARIC ACID ACTS ON SOME OF THE METALS, AND IT MAY BE COMBINED WITH THE OXYDES OF ALL OF THEM WITH DOUBLE AFFINITY.

TARTARIC ACID HAS A PECULIAR TENDENCY TO ENTER INTO COMBINATION WITH MORE THAN ONE BASE, AND TO FORM TERNARY SALTS.

giving notice to soldiers to repair to their quarters in garrison, or to their tents in camp.

TAURID'IA, among the Romans, were certain games in honour of the infernal gods. They are sometimes called *taurii ludi*.

TAU'RUS, in astronomy, the Bull; a splendid constellation in the second sign of the zodiac, containing the Pleiades, Aldebaran, &c. This constellation, according to the British catalogue, contains 141 stars.

TAXES, the assessments imposed by law for the public service, either *direct*, as on persons and necessaries; or *indirect*, as on luxuries and raw materials. Taxes imposed on goods at the time of their importation, are denominated *customs*, *duties*, or *imposts*.

TAX'IDERMY, the art of preparing and preserving specimens of animals.

TAX'IS, in surgery, an operation by which those parts which have quitted their natural situation, are replaced by the hand without the assistance of instruments, as in reducing hernia, &c.

TEA, the leaf of a Chinese tree, from which an agreeable and useful beverage of the same name is made. The tea plant is a native of China, Japan, and Tonquin. It flourishes most in valleys, the sloping sides of mountains, and the banks of rivers exposed to the southern rays of the sun. There are two varieties of the tea plant, *thea viridis*, with broad leaves, and *thea bohea*. The names given in commerce, to the different sorts of tea, are unknown to the Chinese, the imperial excepted, and are supposed to have been applied by the merchants of Canton; but the names by which they are imported into Europe are well known. The black teas are, bohea, congo, campo, souchong, pouchong, and pekoe; the green teas are twankay, hyson skin, young hyson, hyson, imperial, and gunpowder.—Tea, moderately and properly taken, acts as a gentle astringent and corroborative: it strengthens the stomach and bowels, assists digestion, and acts also as a diurétic and diaphoretic; but in most constitutions, if taken to excess, it produces considerable excitement and wakefulness. The tea plant is the growth of a particular region, situated between the 30th and 33rd degrees of north latitude. The trees are planted four or five feet asunder; they have a very stunted appearance; and are not allowed to grow higher than is convenient for men, women, and children to pick the leaves. When this is done, the leaves are put into wide shallow baskets, placed on shelves in the air, or wind, or mild sunshine, from morning till noon; then on a flat cast-iron pan over a charcoal stove, ten or twelve ounces of leaves are thrown at a time, stirred quickly with a hand-broom, and then brushed off again into the baskets, in which they are equally and carefully rubbed between men's hands to roll them; after which they are again dried over a slower fire. The tea is then laid upon a table to be drawn or picked over.—To make singlo, or hyson, the first two gatherings are chosen, and as soon as picked from the trees are put into the pan; next rolled and spread thin, to separate the leaves, which adhere to each other; again well dried, spread, sifted, picked, and roasted two or three times more before it is in a marketable state. In no country of Europe is tea imported in such perfection as in Russia. Conveyed by land through the medium of the large fairs at Ladak and Nijin Novgorod, it retains the virtue of which a sea-voyage is said to deprive it; while its flavour is much enhanced by the leaves of the *olea fragrans*, with which the Chinese pack it for a land journey. It is also said, that the tea grown in the districts from which the Russians alone are allowed to draw their teas, is of a finer flavour owing to the superior fitness of the soil.

TEAK'-TREE *(tectona grandis)*, one of the largest trees known; it may be regarded as the oak of the Eastern world, and the only Indian wood impenetrable by the white ants. It is strong, light, and easily wrought at all ages; and is much used in building ships as well as houses. This tree abounds in the extensive forests of Java, Ceylon, Malabár, Coromandel, &c., but especially in the empires of Birmah and Pegu, from which countries Calcutta and Madras draw all their supplies of ship timber.

TEARS, the limpid fluid secreted by glands adjoining the eye, and increased by emotions of the mind, but more especially by grief. This fluid is also called forth by any injury done to the eye. Tears serve to moisten the cornea and preserve its transparency, as well as to remove any dust or other substance that enters the eye. The organ which secretes this liquid is the lachrymal gland, one of which is situated in the external canthus of each orbit, and emits six or seven excretory ducts, which open on the internal surface of the upper eyelid, and pour forth the tears.——*Tears*, in chemistry, any fluid falling in drops, as gums or resins exuding in the form of tears.

TE'BETH, the tenth month of the Jewish ecclesiastical year, and fourth of the civil. It answers to our month of December.

TECHNOL'OGY, a treatise on the arts; or an explanation of the terms of the arts. A *technical* word is a word that belongs properly or exclusively to the arts; and when speaking of the terms of art, we say *technical* terms, *technical* language, &c.

TE DE'UM, the title of a celebrated hymn used in the Christian church, and so called because it begins with the words, *Te Deum laudamus*; We praise thee, O God. It is sung in the Roman Catholic churches with great pomp and solemnity, on occasions of joyful thanksgiving.

TEETH, in anatomy, small bones fixed in the alveoli of the upper and under jaw. In early infancy, when the softest aliment is required, the gums alone are sufficient; but as we advance in years, teeth are required to masticate the food which then becomes necessary for our subsistence

FREQUENT ADDITIONS OF BOILING WATER TO TEA ARE BEST, AS NO MORE WATER THAN THAT IMMEDIATELY IN CONTACT WITH THE HERB CAN ACT ON IT.

THE TEETH MAY BE COMPARED, IN THE CARNIVOROUS ANIMALS, TO SCISSORS; IN THE OTHER ANIMALS, TO THE STONES OF A MILL.

They are the hardest and whitest of our bones, and, at full maturity, we usually find thirty-two in both jaws, viz. sixteen in each; sometimes, indeed, there are two more, but oftener two less. Every tooth is composed of its *cortex* or *enamel*, and its internal bony substance. The enamel is a very hard and compact substance, of a white colour, and peculiar to the teeth. When broken it appears fibrous or striated; and all the striæ are directed from the circumference to the centre of the tooth. The bony part resembles other bones in its structure, but is much harder than the most compact part of bones in general. Each tooth has an inner cavity, which, beginning by a small opening at the point of the fang, becomes larger, and terminates in the body of the tooth. This cavity is supplied with blood-vessels and nerves, which pass the small hole in the root. In aged people this hole sometimes closes, and the tooth then becomes insensible. The teeth are divided into three classes, viz. *incisores*, *canini*, and *molares* or grinders. The *incisores* are the four teeth in the fore-part of each jaw; they derive their name from their use in dividing and cutting the food in the manner of a wedge. The *canini* are the longest of all the teeth, deriving their name from their resemblance to a dog's tusk, and are intended for laying hold of substances rather than for the purposes of mastication. The *molares*, or grinders, of which there are ten in each jaw, are so called, because from their size and figure they are calculated for grinding the food. The last grinder is shorter and smaller than the rest, and, from its coming through the gums later than the rest, and sometimes not appearing till late in life, is called *dens sapientiæ*.—We have seen it stated by a respectable authority, that the ordinary decay of the teeth commences in the majority of instances, immediately beneath the enamel, in the fine ramifications of the peripheral extremities of the tubes, and proceeds in the direction of the main tubes, and, consequently, by the most direct route to the cavity of the pulp. The decayed substance, in some instances, retains the characteristic tubular structure, which is also observable in the animal basis of healthy teeth after the artificial removal of the earthy salts. The soft condition of the decayed portion of a tooth is well-known to all dentists; it depends upon the removal of the earthy salts from the containing tubes and cells, in which process the decay of teeth essentially consists. The main object of the dentist seems, therefore, to be to detect those appearances in the enamel which indicate the commencement of decay; to break away the enamel, whose natural adhesion to the ivory will be found more or less dissolved at the decayed part; to remove the softened portion of the ivory, and fill up the cavity with gold or other substance. Experience proves, what theory cannot account for,—viz. that the progress of the decay is sometimes thus permanently averted. The calcareous salts are, in such cases, as it were, poured out from the extremities of the tubes divided in the operation, and a thin dense layer intervenes between the exposed surface of the ivory and the stopping.

TEE-TOTALLERS. The reader is referred to the word "Abstinents" for some passing remarks on those who have adopted this singularly ridiculous appellation. Much as these societies were talked of at the time we wrote those lines, and much as we were *really* pleased to see that *any* pledge had force sufficient to reform a drunkard, we did not dream of the miracles about to be wrought in Ireland by a second St. Patrick; still less did we imagine that so absurd a *name* would not, long ere this, have given place to one a little more rational. We consequently had then no intention of introducing it *alphabetically*, as a word sanctioned by custom. But it appears that the words *tee-totallers* and *tee-totallism* have taken root, and we feel compelled by the "pressure from without" to admit them into our vocabulary. [See Temperance Societies.

TEG'UMENTS (common), in anatomy, the general name given by anatomists to the cuticle, rete mucosum, skin, and adipose membrane, which cover every part of the body except the nails.

TEL'EGRAPH, a machine for communicating intelligence to a great distance by various signals or movements previously agreed on. The telegraph, in modern times, was first used by the French in the spring of 1794; it was invented by M. Chappe, who caused it to be used in the following manner. At the first station, which was on the roof of the Louvre, he received in writing from the Committee of Public Safety, the words to be sent to Lisle, near which the French army at that time was. An upright post was erected on the Louvre, at the top of this were two transverse arms, movable in all directions, with much rapidity. The different positions of these arms stood as signs for the letters of the alphabet; and these he reduced in number as much as possible. Having received the sentence to be conveyed, he gave a signal to the second station to prepare. At each station there was a watch-tower, on which telescopes were fixed, and the person on the watch gave the signal of preparation which he had received, and this communicated successively through all the line, which brought them into a state of readiness. The person at the second station received letter by letter the sentence from the Louvre, which he repeated with his own machine: and this was again repeated from the next with almost inconceivable rapidity to the final station at Lisle.——Telegraphs of various constructions have since been erected in this country. Lord George Murray's telegraph was adopted by the admiralty in 1796, and continued in use for twenty years. It consists of six shutters of a square or octagonal form, which turn on pivots within the compartments of a double frame. The universal telegraph, invented by colonel

MAN IS ABLE TO COUNTERACT THE FATAL CONSEQUENCES OF THE LOSS OF TEETH; BUT NO OTHER ANIMAL CAN SUPPLY THEIR LOSS.

Pasley in 1822, has two arms, each of which can exhibit seven positions, with an indicator or mark on one side of the post, for the purpose of distinguishing the positions more accurately. A series of telegraphs are placed at intervals, and information is thus communicated with great rapidity. Twenty-seven telegraphs convey information from Paris to Calais in three minutes; twenty-two from Paris to Lisle in two minutes; forty-six from Strasburg to Paris in six and a half minutes, and eighty from Paris to Brest in ten minutes. At the time of the French expedition to Algiers, *nocturnal telegraphs* were erected, with lanterns of powerful magnifying glasses, and strong reflectors, and lighted with gas.—— But a more singular kind of telegraph now demands our notice, namely, the *Galvanic or Electrical Telegraph at the Great Western Railway*, the invention of Professor Wheatstone.—The space occupied by the case containing the machinery (which simply stands upon a table, and can be removed at pleasure to any part of the room) is little more than that required for a gentleman's hat-box. The telegraph is worked by merely pressing small brass keys, similar to those on a keyed bugle, which acting by galvanic power upon various hands placed upon a dial-plate at the other end of the telegraphic line, point not only to each letter of the alphabet (as each key may be struck or pressed), but the numerals are indicated by the same means, as well as the various points, from a comma to a colon, with notes of admiration and interjection. There is likewise a cross (x) upon the dial, which indicates that when this key is struck a mistake has been made in some part of the sentence telegraphed, and that an erasure is intended. A question, such, for instance, as the following, "How many passengers started from Drayton by the ten o'clock train?" and the answer, could be transmitted from the terminus to Drayton and back in less than two minutes. There are wires communicating with each end passing through a hollow iron tube, not more than an inch and a half in diameter, which is fixed about six inches above the ground, running parallel with the railway, and about two or three feet distant from it. It is said to be the intention of the Great Western Railway Company to carry the tube along the line, and ultimately throughout the whole distance to Bristol. The machinery and the mode of working are so exceedingly simple that a child who could read would be enabled efficiently to transmit and receive information. We hear that the principal objection which has been made to these telegraphs is the difficulty of repairing the wires when broken or damaged; but this, it is said, can be obviated by means of a small carriage moved along the line of the telegraph. The place where the defect lies is indicated by a magnetic needle, which changes its position the instant it arrives at the part where the connection is broken; and the inventor believes it to be quite possible to communicate with it between Dover and Calais!

TEL'ESCOPE, an optical instrument employed in viewing distant objects, as the heavenly bodies. It assists the eye chiefly in two ways; first, by enlarging the visual angle under which a distant object is seen, and thus magnifying that object; and secondly, by collecting and conveying to the eye a larger beam of light than would enter the naked organ, and thus rendering objects distinct and visible which would otherwise be indistinct or invisible. Telescopes are either *refracting* or *reflecting*; the former consist of different lenses through which the objects are seen by rays refracted by them to the eye, and the latter consist of specula from which the rays are reflected and passed to the eye. The lens turned towards the object is called the *object-glass*; and that to which the eye is applied, the *eye glass*; and if the telescope consist of more than two lenses, all but the *object-glass* are called *eye-glasses*. The invention of the telescope, like most other inventions, appears to have dawned upon mankind by gentle degrees. A simple tube, formed by the hand, was found to direct the view, or render it more distinct by singling out the object to be examined, and defending the eye against the rays reflected from others. The experience of this fact led to the use of more efficacious tubes, formed of some convenient material. In the thirteenth century, a manuscript was adorned with a picture of Ptolemy in the act of observing the stars through a tube of four joints or draws: but it was not till the middle of the 16th century (1549), so far as any records evince, that the use of glasses in this instrument was discovered. In fact, no advances were made in the construction of telescopes before the time of Galileo, who, while at Venice, accidentally heard that a sort of optic glass was made in Holland, which brought distant objects nearer; and considering how this thing might be, he set to work and ground two pieces of glass into a form, as well he could, and fitted them to the two ends of an organ pipe, with which he produced an effect that delighted and astonished all beholders. After exhibiting the wonders of this invention to the Venetians on the top of the tower of St. Mark, he devoted himself wholly to the improving and perfecting the telescope, in which he was so successful that it has been usual to give him the honour of being the inventor.—— Great have been the improvements which since that time have been made in the construction of telescopes. Herschel's gigantic telescope, erected at Slough, near Windsor, was completed August 28, 1789; and on the same day the sixth satellite of Saturn was discovered. The diameter of the polished surface of the speculum was forty-eight inches, and its focal distance forty feet. It weighed 2118 pounds, and was placed in one end of an iron tube four feet ten inches in diameter. The largest front-view telescope, at present in England, is that erected at the royal observatory at

SIR J. W. HERSCHEL HAS A REFLECTING TELESCOPE OF TWENTY FEET, WITH WHICH HE SEES COMETS THAT NO OTHER IN EUROPE CAN RENDER VISIBLE.

Greenwich, by Mr. Ramage, in 1820: the diameter of the reflector is fifteen feet, and its focus is twenty-five feet. An improvement has been recently introduced in the reflecting telescope, by making the speculums of platina, so that it will not suffer from rust. But the *achromatic* or refracting telescopes have been brought to such a state of perfection, that may have in some degree superseded the use of the reflecting telescopes.

TELLU'RIUM, in mineralogy, a kind of metal of a whitish colour, soft, brittle, and easily reducible to powder. It melts in a heat something above the fusing point of lead. There are four kinds of ore of tellurium, which are denominated *native, graphic, yellow,* and *white.* The first is of a tin-white colour, passing into lead-gray, with a metallic lustre: the second is of a steel-gray colour, generally splendent, but occasionally slightly tarnished; this kind is of a silver-white, and of a bright metallic lustre; and the last of a colour between iron-black and a dark lead-gray. These ores are found massive or crystalized.——*Tellurium,* a machine for the illustration of the motions and phenomena of the earth.

TEM'ACHIS, in mineralogy, a genus of fossils of the class of *gypsums,* softer than others, and of a bright glittering hue.

TEM'PERAMENT, that peculiarity of organization which in some measure influences our actions, thoughts, and feelings. The ancients distinguished four temperaments—the choleric or bilious, the phlegmatic, the melancholic, and the sanguineous, which derived their names from the supposed excess of one or other of the principal fluids of the human body.——*Temperament,* in music, the accommodation or adjustment of the imperfect sounds, by transferring a part of their defects to the more perfect ones, to remedy in part the false intervals of instruments of fixed sounds, as the piano, organ, &c.

TEM'PERANCE SOCI'ETIES. So great was the propensity for an excessive indulgence in the use of spirits about a century ago, that a report at that time made by the magistrates to a committee of parliament, states positively that there were 12,000 gin-sellers in the metropolis, exclusive of the city and Southwark; and the bishop of Salisbury, in his speech in the House of Lords, says there were 7044 houses licensed for spirits, and 3007 ale-houses; and that boards were put up inscribed with "You may here get drunk for one penny; dead drunk for two pence; and have clean straw for nothing." In short, it appeared that, altogether, there were not less than 20,000 houses and shops for drinking within the bills of mortality. There are at the present time not a fourth of the number; and, with a population at least double, some persons imagine that the practice of drinking spirits has proportionably declined. But the gin-shops of those days were no more like the establishments of the present time, in their extent, than they were to be compared to them in exterior decorations; and although we are rejoiced to see a sensible decrease in the vice of habitual drunkenness, we believe that the decrease is greatly overrated.—The evils of intemperance had long been the subject of much anxious observation, not merely in Great Britain, but elsewhere, more especially in the United States; and the idea of concentrating public sentiment upon it, in some form, to produce important results, seems to have been first conceived there; a meeting, called the General Association of Massachusetts Proper, having been held in 1813, for the express object of "checking the progress of intemperance." The first attempt of the society was to collect facts towards a precise exhibition of the nature and magnitude of the existing evil with the view of drawing public attention to it, and of directing endeavours for its removal. The reports presented, from year to year, embraced statements and calculations which were found to make out a case of the most appalling nature, such as to amaze even those whose solicitude on the subject had been greatest. In 1830, from data carefully collected, the Massachusetts' society stated in their report, that the number who died annually victims of intemperance was estimated at above 37,000; and that 72,000,000 gallons of distilled spirits were consumed in the country, being about six gallons on an average for every man, woman, and child of the whole population. It also stated that about 400,000 of the community were confirmed drunkards; and that there appeared reason to believe that intemperance was responsible for four-fifths of the crimes committed in the country, for at least three quarters of the pauperism existing, and for at least one third of the mental derangement. By these exposures, and an unrelaxing perseverance in the course they had commenced; by the circulation of tracts and the addresses of travelling agents; by the formation of auxiliary associations, and by obtaining individual responsibility for the performance of a variety of duties tending to promote the great object in view,—public notice was attracted, and it led to an imitation of the practice in Great Britain and Ireland. The basis on which these associations have been formed, at least in the outset, has been that of an engagement, on the part of each member, to abstain from the use of distilled spirits, except for medicinal purposes, and to forbear to provide them for the entertainment of friends or the supply of dependents. But of late years new societies have sprung into existence, whose love of temperance is of the ultra kind; and they accordingly pledge themselves to a total abstinence, not from ardent spirits only, but from all wines and fermented liquors. This class is known by the dignified title of *Tee-totallers.* [See ABSTINENTS. But we more especially refer the reader to "Ireland, its Scenery, Character, &c. by Mr. and Mrs. S. C. Hall"—Part I. of which was literally *this day* published—for a most gratifying account of the successful labours of Father Mathew.

AT THE LATE GREAT CATTLE FAIR OF BALLINASLOE (1840), THERE WERE BUT EIGHT GALLONS OF WHISKEY CONSUMED, INSTEAD OF 800 AS BEFORE.

THE "PLEDGE" BELIEVE THAT MR. MATHEW CAN HEAL DISEASES, AND PRESERVE HIS FOLLOWERS FROM ALL SPIRITUAL AND PHYSICAL DANGERS.

It is there stated, that upwards of *two millions five hundred and thirty thousand* individuals have already *pledged* themselves "to abstain from all intoxicating drinks," &c., and that there is every reason to believe that drunkenness and its kindred vices in Ireland will, ere long, be succeeded by industrious habits and their concomitant results.]

TEM'PERATURE, in physics, a definite degree of sensible heat, as indicated by the thermometer; or the constitution of the air according to the diversity of the seasons or difference of climate, &c. When a body applied to another, either excites the sensation of heat, or expands that body, we say it is of a *higher temperature;* when it excites the sensation of cold, or contracts another body, it is said to be of a *lower temperature.* The annual variation of heat is inconsiderable between the tropics, and becomes greater and greater as we approach the poles. This arises from the combination of two causes, namely, the greater or less directness of the sun's rays, and the duration of their action, or the length of time from sunrise to sunset.

TEM'PERATE ZONE, in geography, the space on the earth between the tropics and the polar circles, where the heat is less than in the tropics, and the cold less than in the polar circles.

TEM'PEST, a storm of excessive violence. [See STORMS.]

TEM'PLARS, or KNIGHTS OF THE TEMPLE, a religio-military order, established at Jerusalem, A.D. 1118, for the protection of pilgrims travelling to the Holy Land. During nearly six hundred years, this order maintained an important character in Europe. In every nation it had a particular governor, called *master of the Temple,* or of the *militia of the Temple.* Its riches became immense; a fact which, among many others, justifies the observation of Raynal, that persons who have laid down rules for religious societies have done so with the sole view of making holy men; but that they have laboured more directly and more effectually to make rich ones. Towards the beginning of the seventeenth century the Templars were charged with leaning to Mohammedanism; and, in consequence, the order was abolished under pope Clement V., Edward II. of England, and Philip the Fair of France. In 1307, all the members in England were arrested, and of these, seven suffered at the stake. In 1312, the final suppression was effected by the council of Vienna, by the direction of which fifty others of these persecuted men suffered death in the flames.

TEM'PLE, a place of worship, chiefly applied to heathen worship. Originally temples were open places, as Stonehenge, in Wiltshire. In Rome, some of the temples were open, and called *sacella;* others were roofed, and called *ædes.* The most celebrated of the ancient pagan temples were those of Belus in Babylon, Vulcan at Memphis, Jupiter at Thebes, Diana at Ephesus, Apollo in Miletus, Jupiter Olympius in Athens, and Apollo at Delphi. The most celebrated and magnificent temple erected to the true God, was that built by Solomon in Jerusalem.——The *Temples,* in London, are two inns of court, so called because anciently the dwellings of the Knights Templars. They are called the Inner and the Middle Temple, and are situated near the Thames.——In anatomy, the name of the sides of the face above the ears, in which are the temporal arteries, veins, &c.

TEM'PO (Italian for *time*), signifies, in music, the degree of quickness with which a musical piece is to be executed. The different degrees of time are designated by the following terms: *largo, adagio, andante, allegro,* and *presto;* and the intermediate degrees are described by additions. [See these terms respectively.]

TEM'PORAL, belonging to secular concerns; not spiritual; as the *temporal* revenues of the church, called temporalities. *Temporal courts* are those which take cognizance of civil suits; *temporal power,* civil or political power.

TEMPORA'LIS, or TEM'PORAL, in anatomy, pertaining to the temples, as the *arteria temporalis* or temporal artery.

TENA''CITY, the degree of force with which the particles of bodies cohere or are held together; a term applied particularly to metals which may be drawn into wire, as gold and silver.

TENAIL', in fortification, an outwork consisting of two parallel sides with a front, in which is a re-entering angle. It is single or double.

TEN'AILLONS, in fortification, works constructed on each side of the ravelins, like the lunettes, but differing in this, that one of the faces of the tenaillon is in the direction of the ravelin, whereas that of the lunette is perpendicular to it.

TEN'ANT, in law, one who holds lands or tenements by any right or title, particularly one who occupies lands or tenements at a yearly rent, for life, years, or at will.—*Tenant in capite,* is one who holds immediately of the king. According to the feudal system, all lands in England are considered as held immediately or mediately of the king, who is styled lord paramount. Such tenants, however, are considered as having the fee of the lands and permanent possession.

TENCH, in ichthyology, a fish of the genus *Cyprinus,* found in ponds and rivers. It is distinguished by the diminutive size of the scales, its golden body, and transparent fins. The body is short and thick, the head large, and the lips thick.

TEN'DER, a small vessel employed to attend a larger one for supplying her with provisions or naval stores, or to convey intelligence, &c.——In law, an offer either of money to pay a debt, or of service to be performed, in order to save a penalty or forfeiture which would be incurred by non-payment or non-performance.

TEN'DO ACHIL'LIS, or *Tendon Achilles,* in anatomy, the tendon which connects the calf of the leg with the heel. It was so called,

ALMOST ALL THE REAL PROPERTY OF ENGLAND IS, BY THE LAWS, SUPPOSED TO BE HOLDEN OF, OR DEPENDENT UPON, SOME SUPERIOR LORD.

because, as fable reports, Thetis, the mother of Achilles, held him by that part when she dipped him in the river Styx to make him invulnerable.

TEN'DONS, in anatomy, white elastic fibres, which connect the muscles with the bones.

TEN'ET, any opinion, principle, or doctrine which a person believes and maintains; as the tenets of Christianity; the tenets of Plato, &c.

TEN'NANTITE, in mineralogy, a subspecies of gray copper; a mineral of a lead colour, or iron black, massive or crystalized, found in Cornwall.

TEN'NE, in heraldry, a colour consisting of red and yellow in the coats of gentry, which is represented in engraving by diagonal lines from the dexter to the sinister side of the shield, traversed by perpendicular lines.

TEN'NIS, a kind of play or game in which a ball is kept in motion between opposite parties who strike it with rackets.

TEN'ON, in carpentry, the end of a piece of timber, which is fitted to a mortise for insertion, &c. The form of a tenon is various, as square, dove-tailed, &c.

TEN'OR, in music, the more delicate of the two voices which belong to the mature age of male singers, it being the second of the four parts reckoning from the bass; and originally the air, to which the other parts were auxiliary. What is called *counter-tenor*, (between the treble and the tenor) is in reality only a higher tenor.

TENSE, in grammar, an inflection of verbs by which they are made to signify or distinguish the time of actions or events; as the *present tense*, denoting the time that now is; the *preterite* or *past*, the time that was; and the *future*, the time that will be. Some tenses likewise denote the state of the action, as to its completeness or otherwise, in a certain degree or time, as the *imperfect tense*, which denotes an unfinished action at a certain time; the *perfect*, a finished action at any time; and the *pluperfect*, a finished action before a certain time.

TEN'SION, the state of being stretched or strained. Thus, animals sustain and move themselves by the tension of their muscles and nerves; and a chord or musical string gives an acuter or deeper sound, as it is in a greater or less degree of tension, that is, more or less stretched.

TEN'SOR, in anatomy, an epithet for a muscle which extends the part to which it is fixed; as, the *tensor palati*, *tensor tympani*, &c.

TENT, in surgery, a roll of lint for dilating openings, sinuses, &c.——A term among lapidaries for what they put under table-diamonds when they set them.——A kind of wine of a deep red colour, chiefly from Gallicia or Malaga in Spain.——A portable dwelling or pavilion made of canvas, used for sheltering persons from the weather, particularly soldiers in camp. The wandering Arabs and Tartars dwell in tents.

TENTAC'ULA, or TEN'TACLE, in natural history, a filiform process or organ on the bodies of various animals of the Linnæan class *Vermes*, and of Cuvier's *Mollusca*, *Actinia*, *Medusæ*, *Polypi*, &c. either an organ of feeling, prehension, or motion, sometimes round the mouth, sometimes on other parts of the body.

TEN'TER-GROUND, a place where cloth is stretched and bleached.

TENTHRE'DO, in entomology, a genus of insects of the order *Hymenoptera*. Insects of this tribe are called in English the saw-fly, because the female uses her sting like a saw to cut out spaces in the bark of trees, for the purpose of depositing her eggs.

TEN'URE, in law, the manner of holding lands, &c. of a superior. [See FEUDAL SYSTEM, FEE, &c.]

TERCE-MAJOR, in play, a sequence of the three best cards.

TEREBIN'THINE, in chemistry, consisting of turpentine, or partaking of its qualities.

TERE'DO, a genus of the class *Vermes*. A worm that bores and penetrates the bottom of ships.

TERM, in law, the space of time which the courts are open for the trial of causes. In England there are four terms in the year; Hilary, Easter, Trinity, and Michaelmas terms. These terms are observed by the courts of queen's bench, the common pleas and exchequer, but not by the parliament, the chancery, or by inferior courts. The rest of the year is called vacation.——In universities, &c., the fixed period or time during which students are compelled to reside there previously to their taking a degree. These fall within the four quarters of the year, and are distinguished by the same names as the law terms.——In the arts, a word or expression that denotes something peculiar to an art: as, a technical *term*.——In contracts, *terms* mean conditions upon which work is agreed to be performed.

TER'MES, or TERMITES, a genus of insects of the order *Neuroptera*: there are ten species of this genus, of which the *termites*, or white ants, are the most curious. These extraordinary insects are said to exceed the common ant, the bee, and the beaver in their skill, ingenuity, and good government. They build pyramidal structures ten or twelve feet high, that resemble villages in extent, and divide them off into several apartments, as magazines, chambers, galleries, &c. They are no less dextrous and remarkable in their manner of providing themselves food; devouring all vegetable and animal substances within reach, and leaving timbers and furniture in mere leaves and outside forms. When assaulted, they make their attack and defence with system and desperate courage. [See ANT.]

TERM'INAL, in botany, growing at the end of a branch or stem; as, a *terminal* scape, flower, or spike.

TERMINA'LIA, in antiquity, feasts held by the Romans on the 22nd and 23rd of February, in honour of Terminus, the god of boundaries or land-marks. Cakes and fruit were originally offered, but afterwards

WHERE THE SERVICE WAS FREE, BUT UNCERTAIN, AS MILITARY SERVICE WITH HOMAGE, THAT TENURE WAS CALLED KNIGHT-SERVICE.

animals formed part of the sacrifice.——*Terminalia*, in botany, a genus of plants, class 23 *Polygamia*, order 1 *Monœcia*.

TER'MINI, in architecture, figures used by the Romans for the support of entablatures, in the place of columns: the upper part consisted of the head and breast of a human body, and the lower of the inverted frustum of a cone. They were so called because they were principally used as boundary marks, and represented their god Terminus, whose altar was on the Tarpeian rock, where he was represented with a human head, without feet or arms, to intimate that he never moved, wherever he might be placed.

TERMINOL'OGY, that branch of a science or art which explains the meaning of its technical terms. In some sciences it is of particular importance; in botany, for instance, where not even a leaf can be described without an agreement on certain technical terms.

TERMIN'THUS, in surgery, a large painful tumour on the skin.

TER'NATE, in botany, an epithet for a leaf that has three leaflets on a petiole, as in trefoil, strawberry, bramble, &c. There are leaves also *biternate* and *triternate*, having three ternate or three biternate leaflets. ——*Ternate bat*, in zoology, a species of bat of a large kind, found in Ternate and other East-Indian isles.

TER'RACE, a platform or bank of earth raised and breasted, particularly in fortification. Also, a raised walk in a garden, having sloping sides laid with turf.

TER'RA COTTA, in the arts, the name given to a very large class of remains of antiquity modelled in clay, many admirable specimens of which have been discovered in Tuscany and Rome. They consist of lamps and vessels of various kinds, besides entire figures and reliefs, some of which display the talents of the sculptor or modeller in no ordinary degree. *Terra cotta* is literally "baked clay;" and the various articles so named, of modern manufacture (some of which are extremely tasteful), are modelled or cast in a paste made of pipe or potter's clay and a fine-grained colourless sand, from Ryegate, with pulverized potsherds, slowly dried in the air, and afterwards baked in a kiln.

TER'RA DI SIE'NA, a brown ferruginous ochre, employed in painting.

TER'RA FIR'MA, the main land: the name particularly given to a country of South America, extending from the Atlantic to the Pacific ocean to the extent of 1300 miles.

TER'RA JAPON'ICA, Japan earth, the inspissated juice of a species of acacia.

TER'RA *a terra*, in horsemanship, a series of low leaps which a horse makes forwards, bearing sideways, and working upon two treads.

TER'RÆ, in mineralogy, Earths; one of the classes into which mineral substances have been mostly divided.

TER'RÆ FIL'IUS, a scholar at the university of Oxford, formerly appointed to make jesting satirical speeches. Surely there must have been a great deal more of gravity in a college life formerly than at present, or else an inordinate love of mirth, to render such an appointment necessary: for (with all due deference be it spoken) though the children of Minerva abound in that classic region, there never appears to be any scarcity of the sons of Momus. Nay, how many grave divines are there, and noble lords, spiritual as well as temporal, who, in their hours of relaxation, set the table in a roar with their long-cherished Oxonian reminiscences, and delight to dwell on choice facetiæ gleaned in those claustral palaces that grace the banks of Isis!

TERRE-VERTE, in mineralogy, a species of green earth used by painters. It is an indurated clay, found in the earth in large flat masses, imbedded in strata of other species of earth. It is of a fine regular structure, and of a smooth glossy surface.

TER'TIAN, in medicine, an ague or intermitting fever, the paroxysms of which return every other day.

TER'TIARY FORMATIONS, in geology, a series of horizontal strata, more recent than the chalk formation, consisting chiefly of sand and clay, and frequently embracing vast quantities of organic remains of the larger animals. It comprehends the *alluvial* formation, which embraces those deposits only which have resulted from causes still in operation; and the *diluvial* formation, which is constituted of such deposits as are supposed to have been produced by the deluge. [See GEOLOGY.]

TES'SELATED, formed in little squares or mosaic work, as, a *tesselated* pavement. ——In botany, spotted or checkered like a chess-board; as, a *tesselated* leaf.

TEST, in chemistry, a term applied to any substance which serves to detect the presence of a poisonous ingredient in a composition. Also, in metallurgy, a cupel or pot for separating base metals from gold or silver.

TESTA'CEOUS, pertaining to animals which have a strong, thick, and entire shell, as oysters; and thus distinguished from *crustaceous*, which pertains to all whose shells are more thin and soft, and consist of several pieces jointed, as lobsters, &c.——*Testaceous medicines* are all preparations of shells and similar substances, as the powder of crabs' claws, pearl, &c.

TESTA'CEA, in natural history, an order of the class *Vermes*, of which there are thirty-six genera. The animal is *molluscous*, that is, of a soft nature, and simple structure, covered with a calcareous habitation or shell. The shell has been considered as analogous to the bones of animals, although its formation and growth are very different, since it serves as a base or support to the muscles, which are attached to its internal surface. The principal use of the shell is, however, to serve as a covering or defence to the animal. Testaceous animals are not only extremely different in external form, but also in the mode of their

MANY SPECIMENS OF ANCIENT TESSELATED PAVEMENTS HAVE BEEN DUG UP IN ITALY, ENGLAND, AND OTHER COUNTRIES.

TERRA, THE EARTH, WAS A COSMOLOGICAL DIVINITY OF THE ANCIENTS.

THE SHELL OF THE TESTUDO MIDAS, OR COMMON SEA TURTLE, IS SO VERY STRONG, THAT IT CAN CARRY UPWARDS OF 600 LBS. ON ITS BACK.

production. Some are viviparous, as most of those that inhabit bivalve shells, multivalves, and some univalves; while the others which form the greatest proportion, are oviparous. In one point they all agree, that whatever be the mode of their production, whether from an egg, or otherwise, the shell is formed on the body of the young animal, and is proportioned to its bulk.

TES'TAMENT, in law, a solemn authentic instrument in writing, whereby a man declares his last will as to the disposal of his estate and effects after his death.——*Testament*, in theology, the name of each of the volumes of the Holy Scriptures, that is, the Old and the New Testament.—The first *Testament* printed in the English language was in 1526. This translation was made by William Tyndale, and was published abroad, after which it was circulated at Oxford and London. Tonstall, bishop of London, and Sir Thomas More, bought up almost the whole impression, and burnt it at St. Paul's Cross.

TES'TIMONY, the evidence of facts, oral, as in a court of law, or written, as in the records of history. Testimony is probable and credible when in accordance with general experience, corroborated, and distinterested; but improbable, and unworthy of credit, when contrary to general experience, and uncorroborated.

TEST'ING, in metallurgy, the operation of refining large quantities of gold or silver by means of lead, in the vessel called a *test*. In this process the extraneous matter is vitrified, scorified, or destroyed, and the metal left pure.

TESTU'DO, in zoology, a genus of animals, including the marine turtle, the river turtle, and the land tortoise.——*Testudo*, in the military art of the ancients, was a defensive machine, consisting of a wooden tower covered with skins, under which the soldiers skreened themselves when they approached the walls to mine them. It was movable, and called *testudo* because it sheltered the soldiers as a tortoise is covered in its shell.—A similar defence was sometimes formed of boards and moved on wheels.——In medicine, a broad soft tumour between the skull and the skin, called also *talpa* or mole, as resembling the windings of the tortoise or mole.

TET'ANUS, in medicine, a spasmodic contraction of the muscles of voluntary motion, particularly of those which shut the lower jaw: this is commonly termed a *locked jaw*.

TET'RACHORD, in ancient music, a concord consisting of four degrees or intervals, and four terms or sounds; called by us a fourth.

TET'RAD, the number four; a collection of four things.

TETRADIAP'ASON, a musical chord, otherwise called a quadruple eighth or twenty-ninth.

TETRADRACH'MA, in ancient coinage, a silver coin worth four drachmas, 3*s*., the drachma being estimated at 9*d*. sterling.

TETRADYNA'MIA, the 15th class of the Linnæan system of plants, containing two orders, *siliculosa* and *siliquosa*, with four long and two short stamens.

TET'RAGON, in geometry, a figure having four angles; as a square, a rhombus, &c.——In astrology, an aspect of two planets with regard to the earth, when they are distant from each other ninety degrees, or the fourth of a circle.

TETRAGYN'IA, in botany, one of the orders in several of the Linnæan classes, comprehending those plants which have four pistils.

TETRAHE'DRAL, having four equal triangles.——In botany, having four sides, as a pod or silique.

TETRAHE'DRON, in geometry, a figure comprehended under four equilateral and equal triangles.

TETRAHEXAHE'DRAL, in crystalography, exhibiting four ranges of faces, one above another, each range containing six faces.

TETRAN'DRIA, the fourth class of the Linnæan system of plants, containing three orders, *monogynia*, *digynia*, and *tetragynia*, with four stamens.

TETRA'O, in ornithology, a genus of birds of the order *Gallinæ*, having near the eyes a spot, which is either naked, papillous, or thinly covered with feathers. The species consist of the grouse, partridge, and quail.

TETRAPET'ALOUS, in botany, containing four distinct petals or flower leaves.

TETRAPH'YLLOUS, in botany, consisting of four distinct leaves or leaflets; as, a *tetraphyllous* calyx.

TE'TRARCH, a Roman governor of the fourth part of a province. Such originally was the import of the title tetrarch; but it was afterwards applied to any petty king or sovereign. The office, or the territory of a tetrarch, was called a *tetrarchate*.

TET'RASPER'MOUS, in botany, an epithet for a plant which produces four seeds in each flower, as the rough-leaved or verticillate plants

TETRAS'TICH, a stanza, epigram, or poem consisting of four verses.

TET'RASTYLE, in ancient architecture, a building with four columns in front.

TET'TER, in medicine, a common name of several cutaneous diseases. Also a disease of animals of the ring-worm kind.

TEU'CRIUM, in botany, a genus of plants, class 14 *Didynamia*, order 1 *Gymnospermia*. The species consist chiefly of the different kinds of germander.

TEUTON'IC, belonging to the Teutones, an ancient people of Germany. The Teutonic language is the parent of the German-Dutch and Anglo-Saxon.——*Teutonic order*, a religious order of knights, established towards the close of the twelfth century, and thus called as consisting chiefly of Germans or Teutones. The original object of the association was to defend the Christian religion against the infidels, and to take care of the sick in the Holy Land. It was at one period immensely rich and powerful.

TEXT, a term signifying an original dis-

THE SEA TURTLE LIVES ON CUTTLE AND SHELL-FISH, AND GROWS TO A PRODIGIOUS SIZE, SOME HAVING BEEN FOUND TO WEIGH 480 LBS.

course exclusive of any note or commentary. Also, a certain passage of scripture, chosen by a preacher to be the subject of his sermon.—— *Text-book*, a book containing the leading principles or most important points of a science or branch of learning, arranged in order for the use of students.

TEX'TILE, an epithet given to whatever is woven or capable of being woven. *Textile fabrics* accordingly signify stuffs of every description, no matter what the materials may be of which they are composed.

THAM'MUZ, the tenth month of the Jewish civil year, containing 29 days, and answering to a part of June and a part of July.

THANE, the name of an ancient rank among the English or Anglo-Saxons; but after the Norman conquest this title was disused, and *baron* took its place.

THE'A, in botany, the systematic name of the Tea-tree.

THE'ATRE, a building for the exhibition of dramatic performances, as tragedies, comedies, and farces; comprehending the stage, the pit, boxes, galleries, &c. The first royal licence for a theatre in England was granted in 1757, to James Burbage and four others, servants to the earl of Leicester, to act plays at the Globe, Bankside, or in any part of England; but long before their time *miracles* were represented in the open fields. Dramatic exhibitions of all kinds were opposed by the Puritans in 1633, and suspended till 1660, when Charles II. licensed two companies, Killegrew's and Davenant's; the first at the Bull, Vere-street, Clare-market, which in a year or two was removed to Drury-lane; the other was in Dorset-gardens. Till that time boys performed women's parts. Sir William Davenant introduced operas, and both companies united, 1684, and continued together till 1694; when, from the reduced salaries given to the performers, the principal of them, under Betterton, obtained a licence, and withdrew to Portugal-street, Lincoln's-inn-fields, in 1695.—The most ancient theatres in Greece and Rome were temporary, being composed of boards placed gradually above each other for the convenience of spectators. The improvements of the theatre, however, kept pace with dramatic taste, and they were eventually built in a handsome and durable manner, rivalling in size and splendour the most costly edifices. [See DRAMA.]

THE'ISM, the belief or acknowledgment of the existence of a God, as opposed to *atheism*. It has sometimes been defined to be deism; but *theism* differs from *deism*, for although deism implies a belief in the existence of a God, yet it signifies in modern usage a denial of revelation, which *theism* does not.

THEOC'RACY, a state governed by the immediate direction of God; as was the government of the Jews before the time of Saul.

THEOD'OLITE, a mathematical instrument much used in surveying, for the taking of angles, distances, &c.

THEOG'ONY, that branch of the heathen theology which taught the genealogy of their gods.

THEOLO'GIUM, in the ancient theatre, a kind of little stage, above that whereon the ordinary actors appeared; being the place where the machinery of the gods was arranged.

THEOL'OGY, the study of religion, or the science which instructs in the knowledge of God and divine things. Theology consists of two branches, *natural* and *revealed*. *Natural theology* is the knowledge we have of God from his works, by the light of nature and reason. *Revealed* or *supernatural theology*, is altogether founded on divine revelation. Natural religion alone is not suited to our circumstances, for it holds out no hope to the guilty, and in the present feeble and corrupt state of our moral powers, its duties are absolutely impracticable.—There are several other branches into which theology may be divided,—as, 1. *Exegetical theology*, which consists in the explanation and interpretation of the scriptures. 2. *Didactic* or *speculative* theology, by which the several doctrines of religion are stated and explained, and their truth established. 3. *Systematic theology*, which arranges methodically the great truths of religion, so as to enable us to contemplate them in their natural connexion, and to perceive both the mutual dependence of the parts, and the symmetry of the whole. 4. *Practical theology*, which consists of an exhibition, first, of precepts and directions; and, secondly, of the motives by which we should be excited to comply with these; and both these rules and these motives may be either found expressly revealed in scripture, or they may be inferences from what it teaches.

THEOM'ANCY, a species of prophecy in which a god himself was believed to reveal future events.

THEOPHILAN'THROPISTS, the title assumed by a deistical society formed at Paris during the French revolution. The object of its founders was to revive public religious ceremonies, which had altogether ceased during the reign of terror, without returning to the rites and ceremonies of Christianity. The revival of the Catholic religion hastened the decline of the society, and in 1802 the consuls prohibited them from holding their meetings in the churches.

THEOR'BO, a musical instrument made in form of a large lute, except that it has two necks. It is used by the Italians for playing a thorough bass.

THE'OREM, in mathematics, a speculative proposition deduced from several definitions compared together; a proposition to be proved by a chain of reasoning.——In algebra or analysis, it is sometimes used to denote a rule, particularly when that rule is expressed by symbols. A *universal theorem*, extends to any quantity without restriction. A *particular theorem* extends only to a particular quantity, as a *negative theorem* expresses the impossibility of any assertion.

DISTINCTIONS OF RANKS IN THE AUDITORY WAS AS EVIDENT IN THE GREEK AND ROMAN THEATRES AS IN OUR PROVINCIAL TOWNS.

THERMOMETERS WERE INVENTED ABOUT THE BEGINNING OF THE 17TH CENTURY, BUT THE HONOUR OF THE INVENTION IS VARIOUSLY ASCRIBED.

THE'ORY, a doctrine which confines itself to the speculative parts of a subject, without regard to its practical application or illustration.——An exposition of the principles of any science, as the *theory* of music. ——The philosophical explanation of phenomena, either physical or moral, as Newton's *theory* of optics; Smith's *theory* of moral sentiments.——*Theory* is distinguished from *hypothesis*, thus: a theory is founded on inferences drawn from the principles which have been established on independent evidence; an hypothesis is a proposition assumed to account for certain phenomena, and has no other evidence of its truth, than that it affords a satisfactory explanation of those phenomena.

THEOS'OPHIST, one who pretends to derive his knowledge from divine illumination.

THERAPEU'TÆ, a term applied to those who are wholly employed in the service of religion. This general term has been applied to particular sects of men, concerning whom there have been great disputes among the learned. It is generally supposed that St. Mark established a particular society of Christians about Alexandria, of whom Philo gives an account, and calls them *Therapeutæ*. He speaks of them as a particular sect, retired from the world, who spent their time in reading the writings of ancient authors, in singing hymns and songs composed by some of their own sect, and in dancing together the whole night. Some suppose they were *Essenes;* others imagine they were Jews, residing in Egypt; and Eusebius and others consider them as Christians.

THERAPEU'TICS, that part of medicine which treats of the symptoms of disease, and the conclusions to be drawn from them; of the mode of cure to be adopted, and the different systems which are mostly to be relied on.

THERI'ACA, a name given by the ancients to various compositions esteemed efficacious against the effects of poison, but afterwards restrained chiefly to what has been called *Theriaca Andromachi*, or *Venice treacle*, which is a compound of sixty four drugs, prepared, pulverized, and reduced by means of honey to an electuary.

THERMAL WATERS, warm or tepid mineral waters, whose heat varies from 92° to 112°.

THERMO-ELEC'TRO-MAG'NETISM, the phenomena arising out of a flow of electro-magnetism, occasioned by disturbing merely the equilibrium of temperature.

THER'MOLAMP, an instrument or apparatus for illuminating by gas.

THERMOM'ETER, an instrument for measuring the degree of heat. The principle upon which the thermometer is constructed is that of the expansion of bodies, produced by the presence of caloric. The quicksilver in the bulb being expanded, every increase of heat necessarily requires a greater space for its substance, and therefore rises in the tube. In the construction of thermometers, two extremes (the one of heat, and the other of cold) being given, the space between the point to which the quicksilver rises in the one, and that to which it sinks in the other, is graduated, or divided into regular parts or degrees. It consists of mercury enclosed in a glass tube, which is fixed to a graduated frame. The thermometer indicates only the *sensible* heat of bodies, and gives us no information respecting the quantity of latent heat, or of combined heat, which those bodies may contain. There are various kinds of thermometers, but that chiefly used in this country is called Fahrenheit's, from the inventor.

THER'MOSTAT, the name of an apparatus for regulating temperature in distillation, ventilating apartments, heating baths or hothouses, &c. "It operates," (says Dr. Ure, who obtained a patent for the invention in 1831), "upon the physical principle, that when two thin metallic bars of different expansibilities are rivetted or soldered facewise together, any change of temperature in them will cause a sensible movement of flexure in the compound bar, to one side or other; which movement may be made to operate, by the intervention of levers, &c., in any desired degree upon vaives, stop-cocks, stove-registers, air-ventilators, &c.: so as to regulate the temperature of the media in which the said compound bars are placed." [In the inventor's "Dictionary of Arts and Manufactures" are various diagrams, with the necessary explanations, of this ingenious apparatus.]

THE'SIS, a position or proposition which a person advances and offers to maintain, or which is actually maintained by argument; a theme.

THE'URGY, the magician's art; or the power or act of performing supernatural things by invoking the names of God or of subordinate agents.

THISTLE, in botany, the common name of rough prickly plants of the genus *Syngenesia*. The stem is thick and herbaceous; the leaves more or less pinnated, and beset with spines; the flowers are disposed in large dense heads, surrounded with a close, scaly, and usually spiny involucre.

THO'MISTS, the followers of Thomas Aquinas, with respect to predestination and grace, in opposition to Scotus.

THOM'SONITE, a mineral of the zeolite family, occurring generally in masses of a radiated structure.

THORA'CIC, the name of the third order of fishes, in which the ventral fins are placed under the pectoral fins; consisting of flounders, turbot, mackarel, &c.—— *Thoracic duct*, in anatomy, the trunk of the absorbent vessels, which is of a serpentine form.

THO'RAX, in anatomy, that part of the human skeleton which consists of the bones of the chest; also, the cavity of the chest.

THORI'NA, in mineralogy, a primitive earth, resembling zirconia, found in gadolinite. It was discovered in 1828, by Berzelius.

THORN, in botany, a tree or shrub

THE THORACIC DUCT FIRST DISCOVERED IN THE HUMAN BODY BY RUDBEC, A SWEDE; BARTHOLLINE, A DANE; AND D. JOLIFFE, AN ENGLISHMAN—IN 1653.

armed with spines or sharp ligneous shoots; as, the black thorn, white thorn, &c.——A sharp pointed shoot or process from the woody part of a plant. [See SPINE.]

THOROUGH-BASS, in music, the art by which harmony is superadded to any proposed bass, and includes the fundamental rules of composition. This branch of the musical science is twofold, *theoretical* and *practical* Theoretical thorough-bass comprehends the knowledge of the connection and disposition of all the several chords, harmonious and dissonant, and includes all the established laws by which they are formed and regulated. Practical thorough-bass supposes a familiar acquaintance with the figures, a facility in taking the chords they indicate, and judgment in the various applications and effects of those chords in accompaniment.

THOUGHT, the act or operation of the mind when attending to a particular subject or thing; or it is the idea consequent on that operation.

THREAD, a very small twisted line, made of a few fibres of silk, cotton, or hemp, from which it derives its names of silk, cotton, or thread properly so called. ——The filament of any fibrous substance. ——*Air-threads*, the fine white filaments which are seen floating in the air in summer, the production of spiders.

THRUSH, in ornithology, a genus of birds, the *Turdus* of Linnæus, of which the principal species are the missel thrush, the throstle or song thrush, the fieldfare, and the blackbird. Their colours in general are not brilliant, and many of them have spots on the breast. The *thrush*, properly so called, is one of the finest singing birds in this country. Its song, which is rich and varied, commences early in the season, and continues for nine months.——*Thrush*, in medicine, ulcers in the mouth and fauces.

THUGS, a numerous class of robbers and assassins among the Hindoos, whose whole occupation is to waylay, rob, and murder all who do not belong to their own caste. Some most extraordinary disclosures of the murderous deeds of the Thugs have recently come to light, and judicial measures have been taken to bring them to condign punishment, which, it is to be hoped, may have the desired effect.

THULE, a name given by the ancients to the most northern country with which they were acquainted. Some authors imagine it to have been Iceland; others consider it to have been the coast of Norway; while there are many who have not attached to it the idea of any precise country.

THU'LITE, a rare mineral of a peach blossom colour, found in Norway.

THUM'ERSTONE, a siliceous mineral, of a brown gray colour, called also *axinite*, from the resemblance of its flat sharp edges to that of an axe. It is either massive or crystalized; its crystals are in the form of a compressed oblique rhomboidal prism. It derives the name of *thumerstone* from *Thum*, in Saxony, where it was found.

THUM'MIM, a Hebrew word, denoting perfections. The *urim* and *thummim* were worn in the breastplate of the high priest, but what they were has never been satisfactorily ascertained.

THUN'DER, the report which accompanies the discharge of electric fluid in the clouds, or between them and the earth. It arises from the rarefaction or displacing of a line of the air, and its suddenly collapsing, by which vibrations or sounds are produced with reflections or echoes from the clouds and earth. When this explosion is near to a person, the thunder is a rattling or clattering sound, and when distant the sound is heavy and rumbling. This sharpness or acuteness of the sound when near, and the rumbling murmur when distant, are the principal means by which we can ascertain its proximity or distance. Thunder and lightning are well known by their direful effects; but the theory of these phenomena is still involved in some degree of obscurity. The most obvious account of them appears to be the following:—In summer great quantities of exhalations, from sulphureous and other combustible substances, are, by the solar heat, raised into the atmosphere, and carry along with them a great deal of electric matter; so that positive electricity is more or less predominant in the highest regions of the atmosphere where the vapours begin to be condensed. It is stronger in fogs where vapour is more condensed, so as to be almost reduced to drops, and stronger still when thick fogs are resolved into clouds. When this matter is accumulated in any particular strata, it will induce in them changes similar to what is induced upon plates of glass piled on each other. Therefore, if a stratum of air be positively electrified, the stratum above it will be negative, the stratum above that positive, and so on. Now, if an imperfect conductor, as a cloud composed of vesicular vapours mixed with particles of air, come into contact with two such strata, the equilibrium would be restored, and this would be attended with a thunder-clap, and with a flash of lightning. If a positive stratum be situate near the earth, and a cloud intervene, the electrical fluid will, with a loud explosion, discharge itself into the earth; but if the stratum be negative, the contrary effects will take place. Thunder, however, is seldom occasioned by a discharge of electric matter into the earth, or from the earth into the atmosphere. That every discharge of electricity produces some change similar to those of combustion, appears from this circumstance, that light and a sulphureous smell accompany all electrical discharges. Sir John Herschel observes, that thunder can scarcely ever be heard more than twenty or thirty miles from the flash which produces it. Lightning, on the other hand, may be seen (or, at the least, its reflection in the clouds, forming what is called "sheet lightning") at a distance of 150 or 200 miles.——People are often led to inquire what are the best means of safety during a thunder-storm. If out of doors, avoid trees and elevated

objects of every kind; and if the flash is instantly followed by the report—which indicates that the cloud is very near—a recumbent posture is considered the safest. Avoid rivers, ponds, and all streams of water, because water is a conductor, and persons on the water in a boat would be the most prominent object, and therefore most likely to be attracted by the lightning. If within doors, the middle of a large carpeted floor will be tolerably safe. Avoid the chimney; for the iron of and about the grate, the soot that often lines it, and the heated and rarefied air it contains, are all tolerable conductors, and should on that account be avoided. It is never safe to sit near an open window, because a draught of moist air is a good conductor. Hence we should close the windows on such occasions. In bed we are comparatively safe, for the feathers and blankets are bad conductors, and we are to a certain extent insulated in such situations.

THUN'DER-STORM, a storm accompanied with lightning and thunder, generally preceded by a tempestuous wind, which soon subsides, and is succeeded by violent showers. Such dreadful explosions of electricity, or such rushing winds as are common in tropical regions, and in many parts of America, are but rarely experienced in this country. [See STORMS, HURRICANE, &c.]

THURS'DAY, the fifth day of the week, so named by the Saxons from *Thor*, the old Teutonic god of thunder, answering to the Jove of the Greeks and Romans.

THYME, in botany, a plant of the genus *Thymus*. The garden thyme is a warm, pungent aromatic, much in use for culinary purposes. Its essential oil is extremely acrid and pungent.

THY'MUS, in anatomy, a glandular body divided into lobes, situated behind the sternum. It is largest in the fœtus, diminishes after birth, and in adults often entirely disappears. In calves it is called the *sweetbread*.

THY'ROID, in anatomy, a term applied to one of the cartilages of the larynx (so called from its figure bearing a resemblance to a shield), and to a gland situated near that cartilage, as also to the veins and arteries of that gland.

THYRSE, in botany, a species of inflorescence; a dense or close panicle, more or less of an ovate figure, as in the lilac.

THYR'SUS, in antiquity, an attribute of Bacchus and his votaries. It consisted of a lance, the iron of which was concealed by ivy-leaves. It was used at all the festivals held in honour of the god of wine, and often enveloped with wreaths of ivy or bay, or otherwise ornamented.

TIA'RA, an ancient crown, which does not appear to have always the same shape. Among the Persians, however, it was a sort of turban, formed like a half moon, and from this is derived the *tiara* of the pope. Originally the popes wore a common bishop's mitre. The tiara and keys are badges of the papal dignity. [See MITRE.]

TIC DOULOUREU'X [Fr.] in medicine, a most painful affection of a facial nerve, deriving its name from its sudden and excruciating stroke. It is characterized by acute pain, attended with convulsive twitchings of the muscles; and is regarded as one of those diseases which generally baffle medical skill.

TICK, in entomology, a species of *Acarus*, an insect which infests cows, swine, goats, sheep, and dogs. It is of a globose form and of a livid colour, with elevated antennæ, and full of blood.

TIDES, the *flux* and *reflux*, or rise and fall of the sea, twice in every day, 50½ minutes later one day than another, and higher after the new and full moon than after the quarters. This ebb and flow are evidently connected with the moon's motions; and it is usual to attribute it to the moon's attractive influence principally, but partly to that of the sun. At new and full moon, when the sun's and moon's action conspire, the tides are highest, and are called *spring* tides: but at the first and last quarters of the moon, the action on one body tends to counteract that on the other; and the tides, both at ebb and flow, are smallest, and are called *neap* tides. —To witness, from day to day, at a certain regular succession of hours, an enormous body of water advancing by slow degrees, defying all barriers which may be opposed, until it reaches a certain elevation, and then as regularly falling and retreating; its very apparent irregularities being soon found to conform themselves to regular periods; and all this without any apparent cause acting to produce it; and going on with unceasing regularity, not merely in one place, but all over the world;—these are phenomena which powerfully claim our attention, independent of their great practical importance to the navigator, and their influence on commerce. Yet though some vague hints of the true cause had been thrown out by several philosophers, no one gave anything like a satisfactory explanation till Newton. He perceived at once that the phenomenon was, at least in its more general features, a simple consequence of his principle of universal gravitation acting between the sun, the moon, the solid earth, and the waters of the ocean. The waters, for a large space under the moon, being more attracted than the great body of the earth, are thus rendered lighter than those parts of the ocean which are at the same distance as the earth's centre; and, being lighter, they are forced upwards a little by the surrounding mass, which is heavier. The sun, being at an immensely greater distance, has a less powerful action, but of the same kind. As the earth revolves in twenty-four hours on its axis, any one point on its surface is brought once under the moon, and once into the position opposite; and at each position experiences the rise or protuberance of the waters just mentioned; in other words, two daily tides, or high water twice in every twenty-four hours. Such is the elementary conception of the Newtonian

THE DIFFERENCE BETWEEN A SOLAR DAY AND A TIDAL DAY IS CALLED THE "PRIMING" OR THE "RETARDATION" OF THE TIDES.

THE DIFFERENT HEIGHTS TO WHICH THE SAME TIDE RISES, IN PLACES BUT LITTLE DISTANT, DEPEND UPON LOCAL CIRCUMSTANCES.

theory of tides. But, in the development of the vast system of universal gravitation, Newton clearly saw that it would be utterly in vain for him to attempt following out the principle into all the varied and complicated results to which it led. He contented himself with verifying all its great leading points, and leaving the minuter details to his successors. That is to say, all the apparent irregularities in the progress of the tide-wave, all the variations in the time of high water at different places, all the particular effects of the obstructions occasioned by the varied forms of continents, and the changes in the depth of the sea, were to be examined and described; and then again the theory was to be brought to bear upon them, so as to show whether it would afford a satisfactory explanation; and thus the whole series of phenomena, not only in their grander features, but even up to their lesser details, be all susceptible of explanation on the one comprehensive and pervading principle of *gravitation*.—The extreme practical importance of a correct knowledge of the tides on coasts and in harbours, has in many places led to the prosecution of some sort of regular observations, to determine what is called the establishment of particular ports. This means the interval of time after the new and full moon passing the meridian, at which it is high water there; from this the time of high water on other days is known from the age of the moon. Much has been done of late years to arrive at this knowledge, particularly by Mr. Whewell, whose profound and elaborate researches, aided by the ready assistance and co-operation his inquiries have met with, not only from the British government but from various foreign powers, have thrown much new light on this very interesting subject.

TIERCE, in heraldry, an epithet for the field when it is divided into three acres. Also, a liquid measure containing 42 gallons.

TIERS ETAT [Fr.], *third estate*. This term was universally applied in France to the mass of the people under the old *regime*. Before the cities rose to wealth and influence, the nobility and clergy possessed the property of almost the whole country, and the people were subject to the most degrading humiliations; but as trade and commerce began to render men independent, and they were able to shake off their feudal bonds, the *tiers état* gradually rose into importance; and at length the third estate, during the revolution, may be said to have become the nation itself.

TI'GER, in zoology, a fierce and rapacious animal of the genus *Felis*. It is a native of the East Indies and some other parts of Asia; but wherever it is known, its strength and sanguinary disposition are such as to excite the terror of the inhabitants. It comes into the midst of villages in the night time, for the purpose of carrying off cattle, and it has often been known to single out for prey some human victim. No animal, except the elephant, is capable of resisting it. It is of a yellowish brown colour, with transverse black stripes; and the tail has alternate black and yellow rings. It resembles the other animals of the cat tribe, and can be tamed as easily as the lion.

TIL'LAGE, the art and practice of cultivating the ground by ploughing, harrowing, rolling, and whatever other operations are necessary to render the soil productive.

TIL'LER *(of a ship)*, a lever or piece of wood fastened in the head of the rudder, by which it is moved. In small ships and boats it is called the *helm*.——*Tiller-rope*, the rope which forms a communication between the fore end of the tiller and the wheel.

TIM'BER, a name for all kinds of wood to be used in building, carpentry, joinery, turnery, &c. We also apply the word to standing trees which are suitable for these purposes; as, a forest contains excellent *timber;* or, to the beams, rafters, planks, &c. hewed or sawed from such trees.——In ships, a *timber* is a rib or curving piece of wood, branching outward from the keel in a curving direction.

TIM'BREL, an ancient musical instrument; a kind of tabor or tambourine, frequently mentioned in scripture.

TIME, a portion of duration, whether past, present, or future; marked by certain periods or measures, chiefly by the motion and revolution of the sun. The idea of time, Mr. Locke observes, we acquire by considering any part of infinite duration as set out by periodical measures: the idea of any particular time, or length of duration, as a day, an hour, &c. we acquire first, by observing certain appearances at regular, and seemingly at equidistant periods. Now, by being able to repeat those lengths or measures of time, as often as we will, we can imagine duration where nothing really endures or exists; and thus we imagine tomorrow, next year, &c. Time is either *astronomical* or *civil; astronomical* when considered with respect to the motion of the heavenly bodies only; and *civil*, when considered with reference to the subdivisions of centuries, years, months, days, hours, minutes, and seconds, which have been adapted to this or that portion of mankind. ——*Time*, in music, the measure of sounds in regard to their continuance or duration; as, *common time*, and *triple time*.

TIMOC'RACY, that form of government whose laws require a certain property to enable a citizen to be capable of the highest offices.

TIN, a metal of a silver-white colour, very ductile and malleable. It gives out, while bending, a crackling noise; is fusible at a heat much less than that of ignition; is soluble in muriatic acid, and, by dilute nitric acid, is rapidly converted into a white oxyde. Tin has been known from the earliest ages. It appears to have been in common use in the time of Moses. It was much employed by the Egyptians in the arts, and by the Greeks as an alloy with other metals. Pliny speaks of it under the name of white lead, as a metal well known

TIN WAS NOWHERE FOUND ON THE CONTINENT TILL 1241; IN BARBARY, 1640; IN INDIA, 1740; AND IN NEW SPAIN, 1782.

A LIVE TOAD WAS FOUND INCLOSED IN STONE, IN THE LINE OF THE LONDON AND BIRMINGHAM RAILWAY, AT COVENTRY, JUNE 16, 1835.

in the arts, and even applied in the fabrication of many ornaments of luxury. He ascribes to the Gauls the invention of the art of tinning, or covering other metals with a thin coat of tin. The Phœnicians procured it from Spain and from Britain, with which nations they carried on a very lucrative commerce. According to Aristotle, the tin mines of Cornwall were known and worked in his time; and it still continues the most productive country in this metal in all Europe. Diodorus Siculus, who wrote 40 years before Christ, describes the method of working these mines, and says that their produce was conveyed to Gaul, and thence to different parts of Italy. It is also raised in great quantities in South America, and is very pure, but not so neatly manufactured as the Cornish tin. The first process to which tin is subjected is grinding. The ground ore is then washed, which removes the impurities; for the specific gravity is so high that it is easy to wash away the earthy matter, and even some of the foreign metallic ores with which it is often mingled. The next process is roasting the ore in a reverbertory furnace, which expels the sulphur and arsenic with which the foreign matters were combined. It afterwards repeatedly undergoes the effects of fusion, and being at length purified from the admixture of all foreign substances, is cast into blocks, weighing each about 300 lbs. Tin is much used in the state of very thin leaves: it is then called *tin foil*. This is made from the finest tin, first cast into an ingot, then laminated to a certain extent, and afterwards beat out with a hammer. Tin is used for tinning copper, iron, &c. and the salts of tin are employed in dyeing.——*Tin Plate.* Tin combines with iron, and adheres strongly to its surface, forming a thin covering. This is one of the most useful combinations of tin, for it renders the iron fit for a great many valuable purposes, for which, otherwise, on account of its strong tendency to oxydation, it would be totally inapplicable. This is well known by the name of tin-plate, or white iron.—Tin and zinc are easily combined by fusion. This alloy is often the principal ingredient in the compound called *pewter*. Lead and tin may be combined in any proportion by fusion. This alloy is harder, and possesses much more tenacity than tin; and these qualities are at a maximum when the alloy is composed of three parts of tin and one of lead. Alloyed with small proportions of antimony, copper, and bismuth, tin is formed into various wares resembling silver, under the names of block-tin, Britannia metal, &c.; and tin united with copper in different proportions, forms bronze and bell-metal.

TINC'TURE, in medicine, a spirituous solution of such vegetable and animal substances as are soluble in pure alcohol or proof-spirit. The virtues of many vegetables are extracted almost equally by water and rectified spirit; but in the watery and spirituous tinctures of them there is this difference,—that the active parts in the watery extractions are blended with a large proportion of innate gummy matter, on which their solubility in this menstruum in a great measure depends, while rectified spirit extracts them almost pure from gum.

TIRAILLEURS, in the military art, a name given to a species of infantry, seldom intended to fight in close order, but generally dispersed, two and two always supporting each other, and in general to skirmish in front of the line. They must be particularly expert in their movements, to collect quickly into masses at the sound of the bugle, and disperse again with equal expedition; and to act constantly with the whole army. They were introduced by the French during the wars of their revolution, and were soon found so useful as to be indispensable.

TIS'RI, the first Hebrew month of the civil year, and the seventh of the ecclesiastical; answering to a part of our September and a part of October.

TIS'SUE, cloth interwoven with gold or silver, or with figured colours.——In anatomy, the peculiar intimate structure of a part is called its *tissue*. A part of a fibrous structure is called a *fibrous tissue:* there are also the *cellular tissue*, the *mucous tissue*, &c.

TITAN'IUM, in mineralogy, a metal of an orange red colour, first found in Cornwall. It occurs in different states of oxydation or intermixture, in various parts of the world. It is very brittle, but so refractory that it can scarcely be reduced.

TITHES, or TYTHES, in ecclesiastical law, the tenth part of the increase annually arising from the profits of land and stock, allotted to the clergy for their support. The great tithes are chiefly corn, hay, and wood: other things of less value are comprehended under the name of small tithes. Tithes are personal, predial, or mixed; *personal*, when accruing from labour, art, or trade; *predial*, when arising from the earth, as hay, wood, and fruit; and *mixed*, when accruing from beasts, which are fed off the land.——The custom of paying tithes, or of offering a tenth of what a man enjoys, has not only been practised under the Jewish law, and by Christians, but we also find something like it among the heathens. The Babylonians and Egyptians gave their kings a tenth of their revenues. The Romans offered a tenth of all they took from their enemies to the gods; and the Gauls, in like manner, gave a tenth to their god Mars.

TI'THING, a community of ten men, into which all England was divided in the time of the Saxons.

TOAD, an unsightly and disgusting amphibious animal, formerly supposed to be venomous, but now considered harmless. It is nearly allied to the frog, with which it is classed by Linnæus under the generic name *rana*. The frog leaps, but the toad, which has a thick heavy body, crawls. They are capable of living a long time without food, and have been known to remain (if the repeated instances which have been given are to be relied on) whole years in

walls, hollow trees, in the earth, or even when artificially enclosed with plaster. That celebrated geologist, professor Buckland, however, states, in reference to a number of experiments which he made on the vitality of toads enclosed in wood and stone: "it seems that toads cannot live a year excluded totally from atmospheric air, and that they cannot survive two years entirely excluded from food: and there is a want of sufficiently minute and accurate observation in those so frequently recorded cases, where toads are said to be found alive within blocks of stone and wood, in cavities that had no communication whatever with the external air."

TOAD'-STONE, in mineralogy, a dark brown basaltic amygdaloid, composed of basalt and green earth, and containing oblong cavities containing calcareous spar.

TOAD'STOOL, a sort of fungous plant that grows in damp places like a mushroom.

TOBAC'CO (*Nicotiana tabacum*), in botany, an herbaceous plant which flourishes in America and all temperate climates, and is remarkable for its acrid and narcotic properties. It is much used for smoking, and, when pulverised and otherwise prepared, as snuff. When first used it sometimes occasions vomiting; but the practice of using it in any form soon conquers distaste, and forms a relish for it that is strong and almost unconquerable. It may well excite astonishment, that the discovery in America of a nauseous and poisonous weed, of an acrid taste and disagreeable odour, in short, whose only properties are deleterious, should have had so great an influence on the social condition of all nations, that it should have become an article of most extensive commerce, and that its culture should have spread more rapidly than that of the most useful plants! The plant is glutinous, and covered with a very short down; the stem upright, four or five feet high, and branching; the leaves are alternate, sessile, oval-oblong, and entire on the margin; the flowers disposed in a terminal panicle; the tube of the corolla long, inflated towards the summit, and dividing into five acute, angular, spreading lobes, of a rose colour. Tobacco is extensively cultivated in France and other European countries, in the Levant and India; but the tobacco of the United States is considered the best.

TO'GA, in antiquity, a robe without sleeves, worn by the Roman citizens in time of peace. It was like a large cloak, and worn over the *tunica*, and was the distinguishing badge of a Roman citizen. The variety in the colour, the fineness of the wool, and the ornaments attached to it, indicated the rank of the wearer. Under the emperors the toga went out of fashion.

TOISE, a fathom or long measure in France, containing six feet.

TOKAY', a kind of wine produced at Tokay in Hungary, made of white grapes. It is distinguished by its aromatic taste; is not considered good till it is three years old, and it continues to improve as long as it is kept.

TOLERATION, in a general sense, the allowance of that which is not wholly approved; but more especially, the allowance of religious opinions and modes of worship in a state, when contrary to or different from those of the established church or belief.

TOMATO, or Love Apple, in botany, a plant and its fruit, a species of *Solanum*. It was originally brought from South America, but is now cultivated in many other parts, for the sake of its large scarlet or orange-coloured fruit, which many esteem a great luxury. The tomato is one of the most common articles in Italian cookery, and its use is rapidly increasing in England.

TOMBAC, in mineralogy, a white alloy of copper; a metallic composition made by mixing and fusing together a large quantity of zinc with a smaller quantity of copper, with arsenic.

TOMEN'TOUS, in botany, downy; or covered with hairs so close as scarcely to be discernible; as, a *tomentous* stem.

TONE, the degree of elevation which any sound has, so as to determine its acuteness or gravity.—*Musical tones* differ from those of common speech chiefly by being more prolonged, so as to give the ear a more decided perception of their height, formation, and relation to each other. There are two kinds of tones, major and minor. The *tone major* is in the ratio of 8 to 9, which results from the difference between the fourth and fifth. The *tone minor* is as 9 to 10, resulting from the difference between the minor third and the fourth.—*Tone*, in medicine, is that state of organization in a body, in which the animal functions are healthy and performed with due vigour. *Tone*, in its primary signification, is *tension*, and tension is the primary signification of strength. Hence its application to the natural healthy state of the animal organs.

TONGUE, in anatomy, a soft, fleshy viscus, very movable in every direction, situated interiorly in the cavity of the mouth, and constituting the organ of taste. It is also an instrument of deglutition.—*Tongue*, figuratively, a language: the whole sum of words used by a particular nation; as, our mother *tongue*, the English *tongue*, &c.

TON'IC, in music, the first or fundamental note of the diatonic scale, and, in general, the fundamental and key-note of every piece.

TON'ICS, medicines that increase the tone of the muscular fibre, and give vigour and action to the system.

TON'SILS, in anatomy, two remarkable glands, one on each side of the mouth, near the uvula, and in popular language called *almonds of the ears*. Their use is to secrete a mucous humour for lubricating the passages; and have several excretory ducts opening into the mouth.

TON'TINE, a sort of increasing life annuity, or a loan given by a number of per-

sons with the benefit of survivorship. Thus an annuity is shared among a number, on the principle that the share of each, at his death, is enjoyed by the survivors, until at last the whole goes to the last survivor, or to the last two or three, according to the terms on which the money is advanced.

TO'PAZ, a gem or precious stone, very generally of a fine yellow or gold colour. It sometimes occurs in masses, but more generally crystalized in rectangular octahedrons. The *oriental topaz* is most esteemed: its colour borders on the orange. The *occidental*, or that found in Peru, is of a softer substance, but its colour is nearly the same. There is also the *oriental aqua-marine*, or blue topaz, besides several other kinds, of inferior worth and beauty.

TO'PHUS, in mineralogy, a genus of calcareous earths, consisting principally of carbonate of lime, precipitated by water, porous, and without lustre.

TOPOG'RAPHY, the accurate description or draught of some particular place or tract of land, as of any particular county, city, town, castle, &c. Topography goes into minute details which geography does not enter upon.

TORNA'DO, a violent gust of wind, or a tempest, distinguished by a whirling motion. Tornadoes are usually accompanied with thunder, lightning, and torrents of rain; but they are of short duration.

TORPE'DO (*Raia torpedo*), in ichthyology, the cramp-fish or electric ray. It is distinguished by the short and somewhat fleshy tail, and the nearly circular disk formed by the body. The electrical apparatus, which has rendered the torpedo so celebrated, consists of small membraneous tubes, disposed like honey-comb, and divided, by horizontal partitions, into small cells, which are filled with a mucous substance. This confirmation is analogous, in many respects, to the galvanic pile, and, accordingly, the identity of the benumbing power of these animals with electricity may be considered established. By exercising this power, the torpedo is enabled to procure its prey, and to protect itself against enemies. Whoever attempts to lay hold of it receives a sudden paralyzing shock in the arms; and small fishes, it is said, are completely stunned on approaching it.——*Torpedo*, the name given to a machine invented by R. Fulton, an American, which was intended to be filled with gunpowder, and placed under the keel of an enemy's vessel, whose destruction would be certain, if the mercy of Providence did not interpose to frustrate the murderous design.

TORREFACTION, in metallurgy, the operation of roasting ores.——In pharmacy, the drying or roasting of drugs on a metallic plate, till they are reduced to the state desired.

TORRICEL'LIAN, an epithet applied to the discoveries made by Torricelli, an Italian philosopher and mathematician, to whom belongs the merit of inventing the barometer. The *Torricellian vacuum* is produced by filling a tube with mercury, and allowing it to descend till it is counterbalanced by the weight of an equal column of the atmosphere, as in the barometer.

TORRID ZONE, in geography, that region of the earth included between the tropics, at the distance of twenty-three and a half degrees from the equator, where the sun is vertical at some period every year, and where the heat is always great.

TOR'SION BAL'ANCE, an instrument for estimating very minute forces by the motion of an index attached to the ends of two fine wires which twist round each other.

TOR'SO, the trunk of a statue, mutilated of head and limbs.

TOR'TOISE, a very harmless animal, of the genus *Testudo*, with a shelly covering, which sleeps through the winter, and lives to a great age. Its flesh is eaten in the West-Indies, and its covering serves for combs and various articles of ornamental manufacture. There are numerous kinds of tortoises, but we must be satisfied with a general description of the two principal, viz. the land tortoise and the sea tortoise, or, as the latter is more often called, the *turtle*. Tortoises are distinguished by having the body enclosed between two shields or shells, so that the head, neck, legs, and tail, only appear externally. The upper shell is formed by the ribs, which are enlarged, flattened, and closely united by sutures; the under shell is the sternum, or breast-bone; and the vertebræ of the neck and tail only are movable. The *turtles* far surpass the others in size, and are found chiefly within the tropics. The head and limbs are but slightly retractile, and the toes are entirely united and enveloped in the common integuments, forming a sort of paddle, as in the seals. The green turtle is well known for its delicious and wholesome flesh. They feed on sea-weed at the bottom, but, at a certain season, visit the shore, for the purpose of depositing their eggs in the sand. The instinct which leads the female turtle to the shore to lay her eggs, renders her a prey to man. The fishers wait for them on shore, at the beginning of the night, especially when it is moonlight; and, either as they come from the sea, or as they return after laying their eggs, they dispatch them by hard blows from a club, or turn them quickly over on their backs, not giving them time either to defend themselves, or to blind their assailants by throwing up the sand with their fins. When very large, it requires the efforts of several men to turn them over, and they must often employ the assistance of handspikes or levers for that purpose. The buckler of this species is so flat as to render it impossible for the animal to recover the recumbent posture, when it is once turned on its back.

TO'RUS, in architecture, a large round moulding in the bases of columns, resembling the astragal in form, but larger.

TO'RY, in British history, a political party, opposed to the *Whigs*, and adhering to the ancient constitution of England. The word *Tory* is Irish, and was formerly

TOPAZ ENTERS INTO THE COMPOSITION OF SEVERAL GRANITIC ROCKS; IT IS FOUND ALSO IN GNEISS, MICA, QUARTZ, &C.

TORTOISESHELL AND HORN BECOME SOFT IN A MODERATE HEAT, SO AS TO BE PRESSED IN A MOULD INTO ANY FORM REQUIRED.

applied to a class of depredators in that country; but the distinctions of *Tory* and *Whig* (as political partisans) were not known before the year 1678, in the reign of Charles II., when those who believed that the Catholics conspired against the king and state, as deposed by Titus Oates, were called *Whigs*, and those who disbelieved it, *Tories*. Of late years the term *Conservatives* has been adopted by the Tories, as tending to convey the best explanation of their principles.—Several fanciful derivations of the words Whig and Tory have occasionally appeared, but we never saw a satisfactory one.

TOU'CAN, in ornithology, a tropical bird, of the genus *Ramphastos*, remarkable for the great size of its beak.

TOUCH, or FEEL'ING, one of the five senses, which is formed by the nervous papillæ of the skin. The term *touch* is most correctly applied to the sensibility which is diffused over the surface of the body. Touch exists with the most exquisite degree of sensibility at the extremities of the fingers and thumbs, and in the lips.——*Touch*, in music, the resistance of the keys of an instrument to the fingers; as, a heavy *touch*, or light *touch*.

TOUCH'-NEEDLE, small bars of gold, silver, and copper combined together in all the different proportions and degrees of mixture. These are used by assayers and refiners, in the trial called the *touch*, to discover the purity of any piece of gold or silver by comparing the mark it leaves on the touchstone with those of the bars.

TOUR'MALINE, in mineralogy, a siliceous stone, of various colours, sometimes used as a gem by jewellers, and remarkable for exhibiting electricity by heat or friction. It occurs in long prisms, deeply striated; and is considered a variety of shorl.

TOUR'NAMENTS, martial sports, where knights used to display their gallantry and adroitness, by encountering each other on horseback with spears or lances. "Impartial taste," says Gibbon, "must prefer a Gothic tournament to the Olympic games of classic antiquity. Instead of the naked spectacles, which corrupted the manners of the Greeks, the pompous decoration of the lists was crowned with the presence of chaste and high-born beauty, from whose hands the conqueror received the prize of his dexterity and courage."—One solitary attempt to imitate the jousts and tournaments of former days was lately made, at the expense of the earl of Eglintoun; but the burlesque was apparently too extravagant, if not too costly, for repetition.

TOUR'NIQUET, or TOUR'NEQUET, a surgical instrument for stopping the flow of blood after an amputation. It is a kind of bandage, straitened or relaxed with a screw.

TOW'ER, in architecture, a building raised to a considerable elevation, and consisting of several stories. Towers are either round or square, and flat on the top, by which they are distinguished from spires or steeples. Before the invention of guns, places were not only fortified with towers, but attacked with movable towers mounted on wheels, which placed the besiegers on a level with the walls.——*Tower of London.* This ancient edifice, which stands on the north bank of the Thames, at the eastern extremity of the city, was built by William I. on the site of a fortress erected by the Romans. A moat, of considerable width and depth, proceeds northward on each side of the fortress, and meets in a semicircle on the banks of the river. Cannon are planted at intervals round the line, and command every avenue leading to Tower-hill. The space enclosed by the walls measures twelve acres five roods, and the circumference on the outside of the ditch is 3156 feet. On the south side of the Tower is an arch called the *traitor's gate*, through which state prisoners were formerly brought from the river. Near the traitor's gate is the *bloody tower*, in which it is supposed the two young princes, Edward V. and his brother, were smothered by order of Richard III. In the south-east angle of the enclosure were the royal apartments; for the Tower was a royal palace for nearly 500 years, and only ceased to be so on the accession of queen Elizabeth. The principal buildings within the walls are the church, the white tower, the ordnance office, the old mint, the record office, the jewel office, the horse armoury, the grand storehouse,—in which is the small armoury,—the lion's tower, and the Beauchamp tower. The *white tower*, a large, square, irregular building, erected in 1070, consists of three stories. On the first story are the sea armoury, consisting of muskets for the sea-service, and other warlike instruments of every description, and the volunteer armoury, for 30,000 men. The horse armoury is a brick building, east of the white tower, adorned with suits of armour of almost every description; but the most striking are the effigies of the English kings on horseback, armed *cap-a-pie*. The line commences with William the Conqueror, and extends to George II. Several of the cuirasses and helmets taken at Waterloo are also kept there. The grand storehouse, north of the white tower, about 345 feet in length and 60 in breadth, was begun by James II. and finished by William III. The upper story is occupied by the small armoury, containing arms for about 200,000 men, all kept in admirable order. The Spanish armoury is principally occupied by the trophies taken from the Spanish armada, such as thumb-screws, boarding-pikes, battle-axes, &c. Here also, as in other parts of the fortress, are numerous historical curiosities. The above sketch includes only the main features of this ancient building; but as the fees for viewing the whole, which were formerly exorbitant, are now a mere trifle, those who visit London should avail themselves of an opportunity of witnessing it.

TOXICOL'OGY, the science of poisons and their antidotes; a study which requires more consideration than has been gene-

THE GREAT LUXURY AND EXPENSE TO WHICH TOURNAMENTS GAVE RISE, FREQUENTLY OCCASIONED THE PROHIBITION OF THEM.

rally given to it. Witness, for instance, the contradictions and discrepancies in the evidence which was given on the subject during the late celebrated trial of Madame Laffarge, respecting the presence of arsenic in the human body.

TOX'ICUM, in medicine, a deadly poison, deriving its name from the Greek for an arrow, because the arrows of the ancients were dipped in poison.

TRA'CHEA, in anatomy, the windpipe, a cartilaginous and membranous canal, through which the air passes into the lungs. The operation of making an opening into the windpipe is hence called *tracheotomy*. The words *laryngotomy* and *bronchotomy* are also used to express the same thing.

TRA'CHEOCELE, in medicine, an enlargement of the thyroid gland; bronchocele.

TRA'CHYTE, in mineralogy, a species of volcanic rock, composed of crystals of glassy feldspar, sometimes with crystals of hornblende, mica, iron pyrites, &c.——*Trachytic*, pertaining to or consisting of trachyte.

TRAC'TION, the act of drawing, or state of being drawn; as the *traction* of a muscle. This word has latterly come much into use, in its primary sense, in reference to the draught on railways, canals, &c.

TRADE, the business of buying and selling for money, comprehending every species of exchange or dealing. It is, however, chiefly used to denote the barter or purchase and sale of goods, wares, and merchandize, either by wholesale or retail. *Foreign trade* consists in the exportation and importation of goods, or the exchange of the commodities of the different countries. *Inland* or *home trade* is the exchange or buying and selling of goods within a country. The word *trade* has also a more limited signification, designating the business which a person has learned, and which he either carries on or is employed in; as, the *trade* of a carpenter, a smith, &c. The liberal arts, learned professions, and agriculture are not included.

TRADE-WINDS, easterly winds which constantly prevail, with slight variations, in certain regions within the tropics. The Trade-winds, in the Atlantic and Pacific oceans, extend to about 28° of latitude each side of the equator; so that a ship, after passing 30°, may expect to enter them every day. But, on first entering them, they will be found to blow from the east, or even a little southerly, and, as you advance, to draw round gradually to north-east. In the East-Indies the trade-winds are periodical, and are called *monsoons*.

TRADI'TION, that which is handed down from age to age by oral communication. Or, the delivery of opinions, doctrines, practices, rites, and customs from father to son, or from ancestors to posterity. There is nothing which requires greater caution than the credence we give to traditionary information. Every person, every country, every age, involuntarily gives a colouring to facts, to say nothing of intentional misstatements. How many pure inventions creep into notice, and soon become widely repeated and believed, either because they suit the purposes of a party, or because they are presented with an air of credibility! It therefore becomes all persons, but more especially the historian, to examine as far as he is able into the origin of every statement, and the character and situation of those on whose authority it rests. And, assuredly, the same degree of caution which the historian should observe in regard to traditions, politicians and citizens of every free government ought to exercise in regard to those party rumours which so frequently find their way into the public prints, and thus, often without the slightest foundation in truth, become stamped with a kind of authority.——In matters of religion, the Jews pay great regard to *tradition;* so also do the Roman Catholics —the latter understanding by the term, sacred truths orally communicated by Christ and the apostles, which, by the assistance of the Holy Ghost, were preserved in the church from one generation of bishops to another. A reverence for tradition is therefore taught in all Catholic catechisms; and it is the foundation on which they believe in their rites and the characteristic parts of their religious worship.

TRAG'ACANTH, in chemistry, a gum which exudes from a prickly bush, the *astragalus tragacantha* of Linnæus, which grows wild in warm climates. The tragacanth is mostly brought from Turkey in small contorted pieces resembling worms; and that which is white, clear, smooth, and vermicular is the best.

TRA''GEDY, a drama representing some grand and serious action, and mostly terminating in some fatal event.——In figurative language, any fatal and mournful event, particularly where human lives are lost by violence, is often called a *tragedy*.

TRAGI-COM'EDY, a dramatic piece partaking of the nature both of tragedy and comedy.

TRAJEC'TORY, in astronomy, the orbit or path described by a comet, which is supposed to be elliptical.

TRAMON'TANE, lying beyond, or on the farther side of the mountains; applied, particularly by the Italians, to such as live north of the Alps.

TRANCE, a state in which the voluntary functions of the body are suspended, and the soul seems to be rapt in visions.

TRANSAL'PINE, lying to the north or west of the Alps: as, *Transalpine* Gaul: opposed to *Cisalpine*.

TRANSATLAN'TIC, lying or being beyond the Atlantic. When used by a person in Europe or Africa, *transatlantic* signifies being in America: and *vice versâ*

TRANSCENDEN'TAL, in philosophy, according to the definition of Kant, "that knowledge which occupies itself not so much with objects as with the way of knowing those objects;" or, "the philosophy of the pure, merely speculative reason, from

which the practical is separated."——*Transcendental quantities*, in geometry, are indeterminate ones, or such as cannot be expressed or fixed to any constant equation. ——*Transcendental curve*, such a curve as cannot be defined by any algebraic equation.

TRAN'SCRIPT, a copy of any original writing, particularly that of an act or instrument inserted in the body of another. The title to land must be transferred by deed.

TRAN'SEPT, in architecture, the aisle of ancient churches, extending across the nave and main aisles.

TRANS'FER, in commerce, an act whereby a person surrenders his right, interest, or property in anything to another.

TRANSFU'SION, in medicine, the act or operation of transferring the blood of one animal into the vascular system of another by means of a tube.

TRAN'SIT, in astronomy, the passage of the inferior planets, Venus or Mercury, over the sun, by observing which at distant places, the angular size of the earth at the sun is determined, and, consequently, its distance. When a smaller body passes behind a larger, it is said to suffer an *occultation*.

TRANSI''TION, in rhetoric, is of two kinds. The first is when a speech is introduced abruptly; as when Milton gives an account of our first ancestors' evening devotions:—

Both turn'd, and under open sky adored
The God that made both air, sky, earth and heaven.—
——Thou also madest the night,
Maker omnipotent, and Thou the day.

The second is when a writer suddenly leaves the subject he is upon, and passes to another, from which it seems different at first view, but serves to illustrate it.——In music, a change of key from major to minor, or the contrary.

TRANSI''TION ROCKS, the lowest in which are found organized beings, but these consist only of zoophytes, or equivocal animals, and shell-fish, while the rocks above these contain animals possessed of sight and locomotion, and the still more modern ones contain perfect animals. These rocks are supposed to have been formed when the world was passing from an uninhabitable to a habitable state. [See GEOLOGY, ORGANIC REMAINS, &c.]

TRAN'SITIVE, in grammar, an epithet for a verb expressing an action which passes from the agent to an object, from the subject which *does*, to the object on which it is *done*.

TRANSLU'CENT, in mineralogy, an epithet by which is designated the power of transmitting rays of light, but not so as to render objects distinctly visible.

TRANSMIGRA'TION, the Pythagorean doctrine of the passing of the soul from one body into another. A belief in this, under various modifications, has existed in different ages of the world, and by various nations. This belief in the transmigration of the soul, as a means of purification and penance, may have been attended with good consequences in certain states of society; but the Christian is content to leave undrawn the veil which the Creator has placed over the particular circumstances of our future condition.

TRANSMUTA'TION, the change of one substance into another of a different nature. The transmutation of base metals into gold was one of the dreams of alchemy. ——In chemistry, the transmutation of one substance into another is both easy and common; as of water into gas or vapour, or *vice versâ*.——In geometry, the change or reduction of one figure or body into another of the same area or solidity, but of a different form; as of a triangle into a square.

TRAN'SOM, in architecture, a lintel over a door, or the piece that is framed across a double light window.——In a ship, the beam or timber extended across the stern-post, to strengthen the aft part and give it due form.

TRANSPOSI''TION, in algebra, the bringing any term of an equation over to the other side.——*Transposition*, in grammar, a change of the natural order of words in a sentence.——*Transposition*, in music, a change in the composition, either in the transcript or the performance, by which the whole is removed into another key.

TRANSUBSTANTIA'TION, in theology, the supposed conversion or change of the substance of the bread and wine in the eucharist, into the body and blood of Jesus Christ. This is a main point in the Roman Catholic religion, and is rejected by the Protestants, the former maintaining the transubstantiation to be real, the latter only figurative; interpreting the text *hoc est corpus meum*, "this signifies my body;" but the council of Trent strenuously contended for the literal sense of the verb *est*, and say expressly, that in *transubstantiation*, the body and blood of Christ are truly, really, and substantially under the species of bread and wine.

TRANSUMP'TION, a syllogism by concession or agreement, used where a question proposed is transferred to another; with this condition, that the proof of the latter should be admitted for a proof of the former.

TRAPE'ZIAN, in crystalography, having the lateral planes composed of trapeziums situated in two ranges, between two bases.

TRAPE'ZIUM, in geometry, a plane figure contained under four unequal right lines, none of them parallel.——In anatomy, a bone of the carpus.

TRAPEZOID', in geometry, an irregular solid figure having four sides, no two of which are parallel to each other. Also, a plane four-sided figure having two of the opposite sides parallel to each other.

TRAP-ROCKS, in geology, rocks characterized by a columnar form, or whose strata or beds have the form of stairs or steps. It is employed to designate a rock or aggregate in which hornblende predominates, but it conveys no definite idea of any one species; and under this term are comprehended

"IF THE SOULS OF MEN TRANSMIGRATE INTO SPECIES ANSWERING THEIR FORMER NATURES, SOME MEN MUST LIVE OVER MANY SERPENTS."—BROWNE.

NO SUBJECT OF LEGISLATION AND JURIDICAL INTERPRETATION HAS BEEN MORE FRUITFUL OF ABUSE AND CRUELTY THAN TREASON.

hornblende, greenstone, amygdaloid, basalt, wacke, porphyry, and several others. The whole family of trap-rocks have, on the one hand, a close alliance with volcanic rocks, and, on the other, with porphyry and granite. Where basalt is in contact with gneiss, it becomes nearly compact, and approaches to the character of hornstone; and where greenstone rests on sandstone or clay, these rocks have a red and burnt appearance, and a hardness superior to what they possess in other places. The trappean rocks, when free from vesicular cavities, are valuable for architecture, especially the greenstone trap, which is quarried with little expense.

TRAP'-TUFF, in geology, masses of basalt, amygdaloid, hornblende, sandstones, &c. cemented.

TRAV'ERSE, in law, a denial of what the opposite party has advanced in any stage of the pleadings.——In fortification, a *traverse* is a trench with a little parapet for protecting men on the flank; also, a wall raised across a work.——In navigation, *traverse-sailing* is the mode of computing the place of a ship by reducing several short courses made by sudden shifts or turns, to one longer course.——*Traverse-board*, a small board to be hung up in the steerage of a ship, and bored full of holes upon lines, showing the points of compass upon it. By moving a peg on this, the steersman keeps an account of the number of glasses a ship is steered on any point.——*Traverse-table*, a table of difference of latitude and departure.

TRAV'ESTY, or TRAV'ESTIE, the burlesque imitation of an author's style and composition. Most travesties purposely degrade the subject treated; though they may be intended either to ridicule absurdity, or to convert a grave performance into a humorous one.

TREAD'MILL, a mill for grinding corn, which has been introduced into prisons as an instrument of punishment. It has a large wheel, with steps on its external surface, upon which the criminals are placed. Their weight sets the wheel in motion, and they maintain themselves in an upright posture by means of a horizontal bar fixed above them, which they hold. The exercise is very fatiguing, and the prisoners have a short respite after being on the wheel for about ten minutes.

TRE'ASON, in law, is divided into *high treason*, and *petty treason*. High treason is the greatest crime of a civil nature of which a man can be guilty. In general, it is the offence of attempting to subvert the government of the state to which the offender owes allegiance, or of attempting, imagining, or compassing the life of the sovereign, or of the prince, the queen consort, or the heir-apparent of the crown. In England, those convicted of treason are hanged and afterwards beheaded, the more barbarous and revolting part of the sentence, namely, embowelling and quartering, being dispensed with. But a conviction of treason is visited by forfeiture of lands and goods to the crown, and attainder of blood. This, however, may afterwards be reversed. ——*Petty Treason* is the crime of a wife killing her husband, or a servant his master.

TREAS'URER, in law, an officer to whose care the treasure of the crown or of any company is committed.—The *Lord High Treasurer of England* has the charge of all the national revenue.

TREAS'URE-TROVE, in law, money or any other treasure found hidden under the earth, which belongs to the sovereign or some other who claims by the royal grant or by prescription.

TREAS'URY, a place or building where wealth or valuable stores are deposited; particularly the establishment at Westminster, conducted by lords commissioners, for receiving and managing the public revenues, the head commissioner being usually considered as the prime minister.

TREB'LE, the highest or most acute of the parts in music which is adapted to the voice of females or boys.——*Treble note*, the note in the treble stave, placed on the line with the cliff.

TREE, in botany, the general name of the largest of the vegetable kind, consisting of a firm woody stem or trunk, from which spring forth branches, &c., terminating in leaves. All trees may be divided into two classes, timber and fruit-trees; the first including all those trees which are used in machinery, ship-building, &c., or, in general, for purposes of utility; and the second comprehending those trees valued only, or chiefly, for their fruit. Some are remarkable for their beauty; others for the great age to which they arrive before they are at maturity; and some are still more remarkable for their durability. Perhaps the oldest tree of which there is any record in the world, is the cypress of Soma, or Somma, in Lombardy. This celebrated tree is generally supposed to have been planted in the year of the birth of Jesus Christ, and on this account is treated with great reverence by the inhabitants of that part of Lombardy where it grows. Yet the abbé Berloze informs us that there is an ancient chronicle extant at Milan, which proves that it was a tree in the time of Julius Cæsar, B.C. 49.——Groves and woods, in the first ages, were resorted to as temples; and particular trees were supposed to be the residence of certain divinities; thus the Dryads and Hamadryads were believed to be enshrined in oaks. The gods are also said to have taken particular species of trees under their protection. Jupiter, we are told, chose the oak, Venus the myrtle, Apollo the laurel, Cybele the pine tree, Hercules the poplar, Minerva the olive, and Bacchus the ivy and the vine.

TREE-NAIL, a long wooden pin, used in fastening the planks of a ship to the timbers.

TREE-TOAD, in zoology, a small species of toad in North America, which is found on trees, and croaks chiefly in the evening.

TREFOIL, in botany, the common name of many plants of the genus *Trefo-*

TO ENLARGE THE DESCRIPTION OF TREASON HAS OFTEN BEEN RESORTED TO, AS ONE OF THE MEANS OF INCREASING ARBITRARY POWER.

lium. Also, in agriculture, a name of the *Medicago tupulina*, a plant resembling clover, with yellow flowers, much cultivated for hay and fodder.

TRĔL'LIS, in gardening, a structure or frame of cross-barred work, or lattice-work, used for supporting plants. This differs from *treillage*, which consists of light posts and rails for supporting espaliers, and sometimes for wall trees.

TREM'OLITE, in mineralogy, a subspecies of straight-edged augite, and is of three kinds, asbestous, common, and glassy tremolite; all of a fibrous or radiated structure, and of a pearly colour. It is classed by Haüy with hornblende or amphibole.

TRENCHES, or *lines of approach*, in fortification, ditches cut in oblique zig-zag directions, to enable besiegers to approach a fortified place without being exposed to the fire of its cannon. Hence the terms "to open the trenches," to break ground for the purpose of carrying on approaches to a besieged place; "mount the trenches," to mount guard in the trenches, &c.

TREPAN'NING, in surgery, the operation of perforating the skull and taking out a piece, for relieving the brain from pressure, &c. The instrument used is called a *trepan*. [See TREPHINE.]

TREPH'INE, in surgery, a more modern instrument than the *trepan* for performing the operation of trepanning. It is a circular or cylindrical saw, with a handle like that of a gimlet, and a little sharp perforator, called the centre-pin.

TRES'PASS, in law, any violation of another's rights; as, the unlawfully entering on his premises; but when violence accompanies the act, it is called a trespass *vi et armis*.——In a moral sense, the transgression of any divine law or command is a *trespass*.

TRI'AD, in music, the common chord, consisting of the third, fifth, and eighth.

TRI'AL, in law, the examination of causes before a proper judge, which, as regards matters of fact, are to be tried by a jury; as regard matters of law, by the judge; and as regards records, by the record itself. [See LAW, JURY, &c.]

TRIAN'DRIA, one of the Linnæan classes, comprehending plants the flowers of which have three stamens, as the crocus, gladiole, valerian, &c.

TRI'ANGLE, in geometry, a figure of three sides and three angles. Triangles are either plane or spherical. A plane triangle is contained under three right lines; and a spherical one is a triangle contained under three arches of great circles of the sphere. Triangles are denominated, from their angles, right, obtuse, and acute. A right-angled triangle is that which has one right angle; an obtuse-angled triangle is such as has one obtuse angle; and an acute angled triangle is that which has all its angles acute.

TRIBUNE, in Roman antiquity, the title of various officers. *A Tribune of the people*, was chosen out of the plebeians to protect them against encroachments and oppressions of the patricians, and the attempts of the senate and consuls on their liberty. These tribunes were not, strictly speaking, magistrates, or invested with magisterial powers; but they exercised a great influence upon public affairs. They had the power of putting a negative on the decrees of the senate, and of arresting the proceedings of magistrates by their *veto*; and in process of time their influence was increased to such a degree, that they endangered the safety of the state.——*Military tribune*, an officer in the Roman army, who commanded in chief over a body of forces, particularly the division of a legion, consisting usually of about 1000 men.——The title of *tribune* was also given, as we observed above, to various other officers; as *Tribuni ærarii*, tribunes of the treasury. *Tribuni fabricarum*, those who had the direction of the making of arms. Also, *Tribuni marinorum*, *Tribuni nolanorum*, *Tribuni voluptatum*, mentioned in the Theodosian code, as intendants of the public shows, and other diversions.——*Tribune*, in the French houses of legislature, the pulpit or elevated place from which the members deliver their speeches, which they usually read, if of any considerable length. In general, only short replies are made *extempore*.

TRICAP'SULAR, in botany, an epithet for such plants as have three capsules to each flower.

TRICLIN'IUM, a name given by the Greeks to the room where they supped, because three couches or beds were placed about the table. This name was adopted by the Romans as synonymous with *Cœnaculum*. *Triclinium* is sometimes used for the beds on which the guests reclined.

TRICOC'CÆ, the 38th Linnæan natural order of plants; distinguished by a three-cornered capsule, as the euphorbia, &c.

TRICOC'COUS, an epithet for a three-grained capsule, which is one that swells out in three protuberances, internally divided into three cells, with one seed in each.

TRICUS'PIDATE, in botany, an epithet for a stamen, &c. ending in three points.

TRI'DENT, an attribute of Neptune, being a kind of three-pronged sceptre which the fables of antiquity put into the hands of that deity.——*Trident*, among mathematicians, a kind of parabola, by which Des Cartes constructed equations of six dimensions.

TRIDODECAHE'DRAL, in crystalography, presenting three ranges of faces, one above another, each containing twelve faces.

TRI'FID, in botany, divided into three parts by lineate sinuses with straight margins.

TRIF'LOROUS, in botany, bearing three flowers.

TRIFO'LIATE, in botany, having three leaves.

TRIFO'LIUM, in botany, trefoil or clover, of which there are forty-six species, The flowers are generally in round heads;

THE FIRST LOAD BY THE FRENCH, AT THE SIEGE OF HARFLEUR, IN 1449.

EVERY STATION IS EXPOSED TO SOME TRIALS, EITHER TEMPTATIONS THAT PROVOKE OUR APPETITES, OR DISQUIET OUR FEARS.

the pod is scarcely longer than the calyx, univalve, not opening, and deciduous. [See CLOVER.]

TRIG'AMY, the state of having three husbands or three wives at the same time.

TRIG'LYPH, in architecture, a member of the Doric frieze, repeated at equal intervals.

TRIGONOM'ETRY, the art of measuring the sides and angles of triangles. The business of this science is to find the angles where the sides are given; and the sides of their respective ratios when the angles are given. When this science is applied to the solution of plane triangles, it is called *plane* trigonometry; when its application is to spherical triangles, it is called *spherical* trigonometry.

TRIJU'GOUS, in botany, having three pairs. A *trijugous* leaf is a pinnate leaf with three pair of leaflets.

TRIHILATÆ, the 23rd Linnæan natural order of plants; with three seeds marked with a cicatrix, as the maple, &c.

TRIL'LION, the product of a million multiplied by a million, and that product multiplied by a million.

TRINE, in astrology, the aspect or situation of one star with regard to another, when they are distant 120 degrees.

TRIN'GA, in ornithology, a genus of birds, of the order *Grallæ*. Birds of this tribe mostly inhabit marshy places, and are distinguished by the names of the sandpiper, the ruff and reeve, the lapwing, plover, &c.

TRIN'GLE, in architecture, a little square member or ornament, fixed exactly over every triglyph, under the platband of the architrave, from whence the guttæ or pendant drops hang down.

TRIN'ITY, in theology, the ineffable mystery of three persons in one God,—Father, Son, and Holy Spirit.

TRIN'ITY HOUSE, a society so called, incorporated by Henry VIII. in 1515, for the promotion of commerce and navigation, by licensing and regulating pilots, ordering and erecting beacons, light-houses, &c. This corporation is governed by a master, four wardens, eight assistants, and thirty-one elder brothers; besides numerous inferior members of the fraternity, named younger brethren. Many valuable privileges are attached to this corporation, and its revenue amounts to about 140,000*l.* per annum. The hall of the Trinity House is an elegant building, not far from the Tower of London.

TRINO'MIAL, in mathematics, an epithet for any quantity or root consisting of three dimensions.

TRI'O, in music, an instrumental piece of three obligato voices, or two chief voices and an accompanying bass, or of one chief voice and two accompanying parts.

TRIOCTAHE'DRAL, in crystalography, presenting three ranges of faces, one above another, each range containing eight faces.

TRIOC'TILE, an aspect of two planets with regard to the earth, when they are three octants or eight parts of a circle, that is, 135 degrees, distant from each other.

TRIŒ'CIÆ, in botany, the name of the third order in the class *Polygamia*, comprehending such plants as have hermaphrodite, male, and female flowers of the same species, in three distinct individuals.

TRIOLETT', a stanza of eight lines, in which, after the third the first line, and after the sixth the first two lines, are repeated, so that the first line is heard three times.

TRIO'NES, in astronomy, a name for the cluster of seven stars in Ursa Minor, called also Charles's Wain.

TRIP'ARTITE, in botany, an epithet for a leaf which is divided into three parts down to the base, but not wholly separate.

TRIPET'ALOUS, in botany, having three petals or flower leaves.

TRIPH'THONG, in grammar, a coalition of three vowels in one compound sound, or in one syllable, as in *adieu*, *beau*.

TRIPIN'NATE, in botany, an epithet for a species of compound leaf, when a petiole has bipennate leaves ranged on each side of it, as in common fern.

TRIP'LET, in music, a name given to three notes sung or played in the time of two.

TRIP'LE TIME, in music, a time consisting of three measures in a bar.

TRIPLI''CITY, in astrology, the division of the signs according to the number of the elements, each division consisting of three signs.

TRI'POD *(tripos)*, in Grecian antiquity, the sacred seat, supported by three feet, on which the priestesses among the ancients used to deliver the oracles.

TRIP'OLI, in mineralogy, a siliceous mineral, originally brought from Tripoli, used in polishing stones and metals. It has a dull argillaceous appearance, but is not compact. It has a fine hard grain, but does not soften by water, or mix with it.

TRIP'TOTE, in grammar, a name having three cases only.

TRIPYR'AMID, in mineralogy, a genus of spars, the body of which is composed of single pyramids, each of three sides, affixed by their base to some solid body.

TRIQUET'ROUS, in botany, an epithet for a fruit or leaf that has three plane sides or faces. This leaf is usually subulated, or grows gradually smaller, from the base to the point.

TRIRE'MIS, or TRI'REME, in Greek and Roman antiquity, a galley with three tiers or banks of oars, in which the rowers were placed upon seats ascending gradually one above another.

TRISOLYMPONI'CA, in antiquity, one among the Greeks who returned three times victorious from the Olympic games, and on whom special honours were conferred by the state.

TRITER'NATE, in botany, having three biternate leaves, or the divisions of a triple petiole, subdivided into threes.

TRITHE'IST, in theology, one who believes that there are three distinct Gods in

the Godhead, that is, three distinct substances and essences.

TRITICUM, in the Linnæan system, a genus of plants, class 3 *Triandria*, order 2 *Digynia;* consisting of the wheats, which are annuals, yielding grain; and the wheat-grasses.

TRITONE, in music, a false concord, consisting of three tones, two major and one minor tone, or of two tones and two semi-tones.

TRITONS, in the Greek mythology, a kind of demi-gods, half man and half fish, upon whom the Nereids rode.——*Triton*, in entomology, a genus of animals, class *Vermes*, order *Mollusca*.

TRITOXYDE, in chemistry, a substance oxydized in the third degree.

TRITURATION, in pharmacy, the act of reducing a solid body into a fine powder; called also levigation and pulverization.

TRIUMPH, in Roman antiquity, a public and solemn honour conferred by the Romans on a victorious general, by allowing him a magnificent procession through the city. The triumph was of two kinds, the greater and the less, the latter of which was called an *ovation*. The splendid spectacle was as follows: the whole senate went out to meet the victor, who, being seated in a gilded chariot, usually drawn by white horses, and clad in his triumphal robes, was followed by the kings, princes, and generals whom he had vanquished, loaded with chains. Singers and musicians preceded, followed by choice victims, and by the spoils and emblems of the conquered cities and provinces. Lastly followed the victorious army, horse and foot, crowned with laurel, and adorned with the marks of distinction they had received, shouting *Io triumphe*, and singing songs of victory, or of sportive raillery. Upon the capitol, the general rendered public thanks to the gods for the victory, caused the victims to be slaughtered, and dedicated the crown which he wore and a part of the spoils to Jupiter. All the temples were open, and all the altars loaded with offerings and incense; games and combats were celebrated in the public places; the general gave a costly feast, and the shouts of the multitude rent the air with their rejoicings.

TRIUMPHAL ARCH, a grand portico or archway, erected at the entrance of a town, or in some other public situation, in commemoration of some important event, or in honour of some victorious general. Among the remains of antiquity Italy can boast of the relics of several triumphal arches; and many beautiful structures of the kind have been erected in modern times.

TRIUMPHALIS CORONA. [See Crown.]

TRIUMVIRATE, an absolute government administered by three persons, with equal authority; as that of Augustus, Marc Antony, and Lepidus, which gave the last blow to the Roman republic; for Augustus having vanquished Lepidus and Antony, the triumvirate was soon converted into a monarchy.

TRIUMVIRS *(triumviri)*, in Roman history, three men who jointly obtained the sovereign power in Rome.

TROCAR, in surgery, an instrument resembling a pipe, for making incisions, particularly in the operation of tapping for the dropsy.

TROCHANTER, in anatomy, a name given to two apophyses, situated in the upper part of the thigh-bone: they receive the tendons of most of the muscles of the thigh. The *major* process is on the outside, and the *minor* on the inside of the thigh.

TROCHE, a demulcent medicine, made in a cake or stiff paste, which is made by mixing the medicine with sugar and the mucilage of gum.

TROCHEE, in the Greek and Latin poetry, a foot consisting of two syllables, the first long, and the second short.

TROCHILUS, in architecture, a name used by the ancients for a hollow ring round a column, which the moderns call *scotia*.——*Trochilus*, in ornithology, the purple humming-bird, or honey-sucker, a beautiful little bird, a native of America. An aquatic bird, with long legs, has also this name.

TROCHITE, in natural history, a kind of figured fossil stone resembling parts of plants, called St. Cuthbert's beads. These stones are usually of a brownish colour, and break like spar.

TROCHLEA, in anatomy, a cartilage through which the tendon of the trochleary muscle passes.——The *trochleary muscle* is the superior oblique muscle of the eye; the *trochleary nerve*, the nerve which goes to that muscle.

TROGLODYTES, certain tribes in Ethiopia who are represented by ancient writers as living in subterranean caverns, and respecting whom we have many fabulous stories.

TROMBONE, a musical instrument, of which there are three kinds—the bass, the tenor, and the alto. It is extremely powerful, and therefore best suited to grand choruses and other full compositions.

TROOP, in cavalry, a certain number of soldiers mounted, who form a component part of a squadron. It is the same with respect to formation, as *company* in the infantry.——The word *troops* (in the plural) signifies soldiers in general, whether more or less numerous, including infantry, cavalry, and artillery.

TROPE, in rhetoric, an expression used in a different sense from that which it properly signifies; or for the sake of presenting an idea in a lively and forcible manner.

TROPHY, anything taken and preserved as a memorial of victory, as arms, standards, &c. taken from an enemy. It was customary with the ancients to erect their trophies on the spot where they had gained a victory. At first they consisted of the arms they had taken; but afterwards trophies were formed of bronze, marble, or even gold ——In architecture, an ornament representing the stem of a tree, charged or encompassed with military weapons.

THE TRIUMPHAL ARCH KNOWN TO US AS THAT OF CONSTANTINE IS THE BEST PRESERVED OF ALL THE GREAT ANTIQUE ARCHES.

TROP'ICS, in geography, the breadth of the earth, 23½ degrees, or about 1600 miles on each side the equator, over some part of which the sun passes directly vertical two days in the year. It is the hottest, wettest, and most fertile part of the earth, but less favourable to human life than the temperate zones. Its heats are, however, tempered by elevation, and by winds which constantly follow the sun from east to west, and from their convenience to ships are called *Trade-Winds*. In the plains the heat varies from 120 to 80 degrees, and is seldom below 65.——In astronomy, a circle of the sphere drawn through a solstitial point, parallel to the equator. There are two tropics; the tropic of Cancer, on the north of the equator, and the tropic of Capricorn on the south.

TROUBADOU'RS, poets who flourished in Provence from the 10th to the 13th century. They wrote poems on love and gallantry, on the illustrious characters and remarkable events of the times, &c., which they set to music and sung: they were accordingly general favourites in different courts, diffused a taste for their language and poetry over Europe, and essentially contributed towards the restoration of letters and a love for the arts. The royal court in Provence, at Arles, was, from the times of Boso I., for nearly two centuries, the theatre of the finest chivalry, the centre of a romantic life. The assembly of knights and Troubadours, with their Moorish story-tellers and buffoons, and ladies acting as judges or parties in matters of courtesy, exhibit a glittering picture of a mirthful, soft, and luxurious life. The knight of Provence devoted himself to the service of his lady-love in true poetic earnest, and made the dance and the sport of the tilt-yard the great business of his life. Each baron, a sovereign in his own territory, invited the neighbouring knights to his castle to take parts in tournaments and to contend in song, at a time when the knights of Germany and Northern France were challenging each other to deadly combat. There the gallant knight broke his lance on the shield of his manly antagonist: there the princess sat in the circle of ladies, listening seriously to the songs of the knights, contending in rhymes respecting the laws of love, and, at the close of the contest, pronouncing her sentence (*arrêt d'amour*). Thus the life of the Provençals was lyrical in the highest degree; but it was necessarily superficial, and would lose its chief value if unaccompanied by music. In the 11th and 12th centuries it had attained its highest bloom: it had spread into Spain and Lombardy, and even German emperors (Frederic Barbarossa), and English kings (Richard Cœur de Lion), composed songs in the Provençal dialect. But the poetry of the Troubadours, as in the course of time it became more common, became degraded to mere ballad-singing; and the few specimens of it that have been preserved, consist of short war-songs and lyrics of pastoral life and love.

TROUT, a delicate fish of the genus *Salmo*, abounding in many of the rivers of England. Trout frequent the clearest streams, and have always been the favourite sport of the angler. They are very beautiful, the back being mottled, and the sides dark brown, with yellow spots, which have a scarlet dot in the centre. They seldom exceed four pounds in weight, and the general run is between one and two pounds.

TRO'VER, in law, an action which lies against any one who, having the goods of another unjustly in his possession, refuses to deliver them up.

TROY'-WEIGHT, the weight by which gold and silver, jewels, &c. are weighed. It is also used in weighing medicines, in experiments in natural philosophy, and in comparing different weights with each other. The pound contains 12 ounces, or 5,760 grains.

TRUCK SYSTEM, a name given to a mode, at one time very prevalent in manufacturing districts, of the employer paying his workmen in provisions, clothes, and other goods, instead of money. In favour of this practice it was argued, that the manufacturer, having the command of capital, was enabled to establish shops, or general *depôts*, from which the working man could supply his family with necessaries at the cheapest rate; but it was evident that the mechanic had often to pay exorbitant prices for the articles he was compelled to purchase, and was subject to every species of unfair dealing and tyranny by such a system; and, after much discussion, an act was passed for its suppression—1 and 2 Will. IV. c. 32.

TRUF'FLE *(tuber)*, in botany, a subterraneous vegetable production, or kind of mushroom, of a fleshy fungous structure and roundish figure; some having the rind rough, with small tubercles, and others entirely smooth. They abound most in light and dry soils, especially in oak and chestnut forests; and are much esteemed in cookery.

TRUM'PET, the loudest of all portable wind instruments, consisting of a folded tube, generally of brass.——*Speaking-trumpet*, a tube, from six to fifteen feet in length, made of tin, perfectly straight, and having a very large aperture; the mouth-piece being large enough to admit both lips. By means of this instrument the voice is carried, with distinctness, for a mile or more. It is chiefly used at sea.——*The feast of trumpets*, a festival among the Jews, observed on the first day of the seventh month of the sacred year, which was the first of the civil year, and answered to our September. The beginning of the year was proclaimed by sound of trumpet.

TRUM'PETER, in ornithology, the *Phosphia* of Linnæus; a bird of South America, which derives its name from its harsh cry, not unlike a child's trumpet.

TRUN'CATE, in botany, appearing as if cut off at the tip; as, a *truncate* leaf.

TRUN'NIONS, two knobs which project from the opposite sides of a piece of ordnance, whether gun, mortar, or howitzer,

and serve to support it on the cheeks of the carriage.——The *trunnion-plates* are two plates in travelling-carriages, mortars, and howitzers, which cover the upper parts of the side-pieces, and go under the trunnions.

TRUSS, in surgery, a bandage or apparatus used in cases of ruptures, to keep up the reduced parts and hinder further protrusion, and for other purposes.——In navigation, a machine to pull a lower yard close to its mast, and retain it firmly in that position.——A bundle of hay or straw, equal to 56 lbs.

TRUSTEE', in law, one to whom is confided the care of an estate, money, or business, to keep or manage for the benefit of another, either by the direction of a body of creditors or at the instance of an individual, &c., or by a legal instrument called a *deed of trust*.

TRUTH, exact accordance with that which is, has been, or shall be.——*Moral truth* consists in relating things according to the honest persuasion of our minds, and is called also veracity. Metaphysical or transcendental truth, denotes the real existence of things conformable to the ideas which we have annexed to their names.

TU'BA, a wind instrument, used by the ancient Romans, resembling our trumpet, though of a somewhat different form.

TUBE, a hollow cylinder, either of wood or metal, used for the conveyance of fluids, &c. Also, a vessel of animal bodies or plants, which conveys a fluid or other substance.——In botany, the narrow hollow part of a monopetalous corolla, by which it is fixed to the receptacle.

TU'BERCLES, in medicine, little tumours which suppurate and discharge pus.——In botany, little knobs or rough points on the leaves of certain plants. Hence the epithet *tuberculate*.

TU'BEROSE (*Polianthus tuberosa*), an odoriferous plant of the liliaceous kind, formerly called the tuberous hyacinth. The flowers are disposed in a simple elongated spike; they are large, sessile, alternate, tubular, and of a very pure white: the tube of the corolla is a little curved, and divides into six oval obtuse lobes. The essential oil is a grateful perfume. Several remarkable varieties are known.

TU'BEROUS, in botany, consisting of roundish fleshy bodies, or tubers; as the roots of artichokes and potatoes.

TU'BIPORES, in natural history, a genus of zoophytes, formed of upright parallel tubes, containing coral insects.

TU'BULAR, having the form of a tube or pipe.

TUBULA'RES, in natural history, a genus of zoophytes, formed of branching tubes, containing coral animals.

TU'BULOUS, in botany, having a bell-shaped border, with five reflex segments, rising from a tube; as, a *tubulous* floret.

TU'ESDAY, the third day of the week, answering to the *dies Martis* of the Romans, but dedicated by the Saxons to *Tuisco*. The peculiar attribute of the deity worshipped under this name is not clearly known.

TU'FA, in mineralogy, porous volcanic stones, containing much earthy matter. They are formed either by the concretion of loose volcanic dust or cinders, cemented by water, or by the consolidation of mud thrown out of volcanoes.——*Tufaceous*, pertaining to *tufa*.

TUILERIES, the residence of the French monarchs, on the right bank of the Seine, in Paris. It was begun by Catharine de Medici, wife of Henry II. in 1564, and the latest additions made to it were by Napoleon, in 1808. The exterior of the Tuileries is deficient in harmony, having been built at different times, and on very different plans, but the interior is magnificent.

TU'LIP (*tulipa*), in botany, a plant and flower belonging to the genus *Liliaceæ*, of a great variety of colours, and much cultivated for its beauty. The tulip has always been a favourite plant with the Belgians and Dutch; and, about a century after its introduction, the mania prevailed to such an extent in those countries that more than two thousand dollars were often given for a single root. It is still extensively cultivated in Holland.

TU'LIP-TREE, an American tree of the genus *Lyriodendron*. Its luxuriant growth, as well as the beauty and singularity of its foliage and flowers, entitle it to rank among the most magnificent plants which grace the forests of America. The flowers are large and showy, (variegated with different colours, among which yellow predominates) and somewhat resemble those of the tulip. In some parts of the United States, it constitutes, alone, very considerable tracts of the forest, and has been found 140 feet high, with a stem 20 feet in circumference. The heart of the wood is of a light yellow colour, and the sap white: the grain is fine and compact; it is easily wrought, polishes well, and is sufficiently strong for purposes requiring great solidity. The timber, in short, uniting strength with lightness and durability, is applicable to almost all purposes, and is very extensively used.

TU'MOUR, in medicine, the morbid enlargement of a particular part, without being caused by inflammation.

TU'MULUS, a barrow or mound of earth in ancient times raised to the memory of the dead. Barrows of loose stones or of dark mould and flints are very common in England; and urns containing the ashes of those who have here been buried, with spears, swords, shields, bracelets, beads, &c. are among the principal contents. We find, indeed, that these rude funeral monuments are met with in most countries.

TUN, a measure of capacity for liquids. The English tun contains two pipes, or four hogsheads, or 252 gallons.

TU'NIC (*tunica*), a garment worn within doors by the Romans of both sexes, under the toga; the slaves and common people only appearing in it abroad. The senators wore a tunic with a broad stripe (*clavus*) of purple sewed on the breast: the equites

THE TULIP DERIVES ITS NAME FROM ITS RESEMBLANCE TO THE EASTERN HEAD-DRESS CALLED TULIPAN, OR TURBAN.

A SPECIES OF GAMBLING TRAFFIC IN TULIP-ROOTS, IN HOLLAND, IN THE 17TH CENTURY.

had narrow stripes. Hence the terms *laticlavii* and *angusticlavii*, applied to persons of these orders.——In anatomy, a membrane that covers or composes some part or organ; as, the *tunics* or coats of the eye; the *tunics* of the stomach, or the membranous and muscular layers of which it is composed.

TU'NICATED, in botany, an epithet for a bulb composed of numerous concentric coats, as an onion.

TUNNEL, a subterraneous passage. Some are cut through hills to continue the lines of canals, from half a mile to two or three miles long; others are formed on the lines of railroad, where steep hills render them necessary.——That extraordinary undertaking, the *Thames Tunnel*, which is generally considered to be the first ever made under a river, succeeds a prototype, constructed in a somewhat different manner, by queen Semiramis, under the Euphrates at Babylon, between three and four thousand years since. Diodorus Siculus, after describing the bridge which she erected over the river, and two palaces which she built on the banks at the ends of it, tells us that she sunk a square tank 300 furlongs in length and breadth, and 35 feet deep, lined with brick and cemented with bitumen; and having turned the river into it, she made a passage in form of a vault—a tunnel—from one palace to the other, the arches of it being built of firm and strong brick, and plastered over on both sides with bitumen, four cubits thick. Its walls were twenty bricks in thickness rising twelve feet above the arches, and its breadth was fifteen feet. The work being completed in 260 days, the Euphrates was turned into its channel again, and flowed over it; so that Semiramis could go from one palace to the other without passing over the river.

TUNG'STEN, in mineralogy, an ore and a metal obtained from it, the same name being given to each. The ore is of a yellowish or grayish white colour, of a lamellar structure, and infusible by the blowpipe. It occurs massive or crystalized, usually in octahedral crystals. The metal is procured in small panes as fine as sand, of a strong metallic lustre, and of an iron gray colour. It is one of the hardest of the metals, and very brittle.

TUR'BAN, a head-dress worn by most Oriental nations, of very various forms, but consisting generally of a piece of fine cloth or linen wound round a cap. The cap is red or green, roundish on the top, and quilted with cotton. The Turkish sultan's turban contains three heron's feathers, with many diamonds and other precious stones. The grand vizier has two heron's feathers; other officers but one.

TUR'BAN-SHELL, in conchology, a genus of shells, of a spheroidal shape; the animal inhabiting which is a species of sea-urchin.

TUR'BARY, in law, the right of digging turf on another man's land. *Common of turbary*, is the liberty which a tenant enjoys of digging turf on the lord's waste.

TUR'BINATED, in conchology, wreathed conically from a larger base to a kind of apex.——In botany, shaped like an inverted cone; narrow at the base, and broad at the apex.

TUR'BINITE, a fossil or petrified shell of the turbo kind.

TUR'BITH, or TUR'BETH, a root used in the materia medica as a cathartic. It is brought from the East Indies, and is the cortical part of the root of a species of convolvulus.——*Turbith mineral*, is the yellow precipitate subsulphate of mercury.

TUR'BO, in conchology, a genus of univalve shells, with a long, wide, and depressed mouth, in some species approaching to a round shape, and in some having teeth, in others not. They all grow narrow towards the base, are auriculated, and terminate in a very long and sharp point.

TUR'BOT, in ichthyology, a fish of the genus *Pleuronectes*. It grows to the weight of twenty or thirty pounds, and is one of the most esteemed fish at table, being exquisitely flavoured and delicious. Very considerable quantities of turbot are taken on our north-western coasts, but a preference is generally given to those caught by the Dutch.

TUR'DUS, in ornithology, a genus of birds, of which there are 135 species, the chief of which are the thrush, the throstle, the field-fare, the black-bird, and the water-ousel.

TUR'KEY, in ornithology, a large domestic fowl, the *Meleagris gallopavo*. Wild turkeys abound in the forests of America, and domestic turkeys are bred in most countries of Europe. The cock is very proud and irascible, and struts about with his tail expanded when moved either by pride or anger. The flesh, when young, furnishes a table luxury.

TUR'MERIC, or INDIAN SAFFRON, in botany, the root of the *Curcuma longa*. Externally it is grayish, but internally of a deep bright yellow or saffron colour. It has a slight aromatic smell, and a bitterish taste. It is used for dyeing, and in some cases, as a medicine; but it is chiefly noted as a seasoning for ragouts and other dishes, as well as constituting a principal ingredient in curry powder.

TUR'MERITE, a rare mineral occurring in small crystals of a yellowish brown colour, externally brilliant and translucent. It contains alumine, lime, magnesia, and a small portion of iron.

TURNING, in mechanics, a very ingenious and useful art, by which a great variety of articles are manufactured, by cutting or fashioning them while they revolve upon an axis or line, which generally remains immovable. Every solid substance in nature may be submitted to this process, and accordingly we have articles turned in the metals, in wood, in pottery, in stone, in ivory, &c. The simplest process of turning is that of the potter, who, in the first stage of forming his ware, sticks a piece of soft clay upon a wheel, or flat table, while it revolves horizontally, and in this state of rotation of the clay, he fashions it with the

THE FIRST TUNNEL EXCAVATED IN THIS COUNTRY WAS BY MR. BRINDLEY, ON THE DUKE OF BRIDGEWATER'S CANAL NEAR MANCHESTER.

THERE IS NO YELLOW COLOUR SO RICH OR BRIGHT AS TURMERIC, BUT IT IS IMPOSSIBLE TO IMPART TO IT SUFFICIENT DURABILITY.

greatest facility into vessels of every description. But in most operations of the art the revolving body is cut or shaved by applying a chisel, or other suitable tool, to its surface, while in motion; which requires firmness in the action, or axis of rotation, and also that the tool itself should be steadily supported. The instrument, or apparatus for these purposes, is called a *lathe*. The art of turning is most extensively applicable in all the mechanic arts; for the hardest metals and the most ponderous artillery, as well as the softest wood and the most delicate pivots in a watch, can be fashioned by the turning-lathe.

TUR'NIP, in botany, a bulbous plant, the *Brassica rapa*, extensively cultivated for its esculent root. Turnips are a wholesome article of food, much in use. The large rooted varieties have been employed for fodder, during the winter season, from time immemorial. The *ruta baga*, or Swedish turnip, has a large root, and is of a yellowish hue.

TURN'PIKES, the name given to the toll gates on the public roads, the ancient gate being a mere pole or pike. The turnpike roads are formed under acts of parliament, and managed by commissioners, trustees, and surveyors. [See ROADS.]

TURN'SOLE, in botany, a plant of the genus *Heliotropium;* so named because its flower is supposed to turn towards the sun.

TUR'PENTINE, a transparent resinous substance procured from different species of the pine and fir. The best sort comes from North America. The method of obtaining it is by making a series of incisions in the bark of the tree, from which the turpentine exudes, and falls down into receptacles prepared to receive it. English turpentine is from the Scotch fir; Venice turpentine, which is more thin and aromatic, is derived from the *pinus larix;* and the common American turpentine comes from the *pinus palustris*. To obtain the *oil of turpentine*, the juice is distilled in an apparatus like a common still.

TUR'PENTINE TREE, in botany, a tree of the genus *Pistacia*, which produces not only its proper fruit, but a kind of horn or excrescence, made by the puncture of an insect, which appears on the surface of its leaves.

TUR'QUOISE, or TURK'OIS, a mineral of a beautiful sky-blue colour, occurring in thin layers, or in rounded masses. It is destitute of lustre, but susceptible of a high polish, and is much used in jewellery. It contrasts well with diamonds and pearls set in gold. Some naturalists say that the turquoise is a bone impregnated with cupreous particles, and not a real stone.

TURTLE. [See TORTOISE.]

TURTLE-DOVE, in ornithology, a bird of the genus *Columba;* a wild species, whose note is plaintive and tender. [See PIGEON.]

TURTLE-SHELL, in conchology, a beautiful species of *Murex;* also, a tortoise-shell.

TUS'CAN ORDER, one of the orders of architecture, the most ancient, the most massive, and most simple.

TUS'SIS, in medicine, a cough.

TUSSILA'GO, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. The species include common colt's-foot, white-colt's-foot, &c.

TU'TENAG, a metallic compound brought from China, called Chinese copper or white copper. It consists of copper, zinc, and iron.

TUT'TO, or TUT'TI, in Italian music, a direction for all to play in full concert.

TUTTY, in mineralogy, an argillaceous ore of zinc, found in Persia, formed on cylindric moulds into tubular pieces, like the bark of a tree. *Tutty* is also formed by fusing brass or copper, mixed with blende, when it is incrusted in the chimneys of the furnace.

TWAITE, in archæology, wood grubbed up and turned into arable land.

TWELFHI'NDI, among the Anglo-Saxons, men of the highest rank, who were assessed at 1200 shillings; and if any injury were done to such persons, satisfaction was to be made according to their worth.

TWI'LIGHT, the faint light diffused through the atmosphere by the sun, some time before rising, and after setting; arising from the reflection of the sun's rays from the aqueous vapours and atmosphere overhead, which produce this effect in our climate to the height of 44 miles. The morning twilight begins, and the evening twilight ends, when the sun is about eighteen degrees below the horizon. At the poles, where there are six months day and six months night, the twilight continues about two months, so that a great part of the half year's night is illuminated.

TYM'PAN, a part of a printing-press, consisting of a frame covered with parchment, on which the blank sheets are put in order to be laid on the form to be impressed. ——*Tympan*, in architecture, that part of the bottom of the pediments which is enclosed between the cornices. In carpentry, it is applied to the pannels of doors in the same sense.

TYMPANI'TES, or TYM'PANY, in medicine, a flatulent distension of the belly.

TYM'PANUM, in anatomy, the drum or barrel of the ear.——In architecture, the flat surface or space within a pediment. ——In mechanics, a wheel placed round an axis.——Among the Greeks and Romans, a *tympanum* was a musical instrument, not unlike the tambourine, beaten with the hand.

TYPE, in theology, a sign or symbol; a figure of something to come; as, the paschal lamb was a *type* of Christ. To the word in this sense is opposed *antitype;* Christ, therefore, is the *antitype*.——In natural history, by *type* is meant a general form, such as is common to the species of a genus, or the individual of a species.

TYPE-FOUNDING, the art and practice of manufacturing metal letters used by printers. The type, or pattern of the letter, is first cut on a steel punch, and

then sunk in a matrix of brass or copper, about an inch and a half long, and thick in proportion to the size of the letter it is to contain. The fused type-metal is then poured into the mould, and afterwards loosened from the matrix merely by removing the pressure from the spring. A type-foundry is provided with several furnaces, each surmounted with an iron pot containing the type-metal, which consists of three parts of lead and one of antimony. The dexterity of the founder is really surprising; for every movement is executed with such astonishing rapidity and precision, that a skilful workman will cast 500 letters in an hour. The types are then taken by a boy, whose business it is to break off the superfluous metal; and this he does so rapidly as to clear three or four thousand per hour. From his hands the types go to the *rubber*, who sits with a grit-stone slab on a table before him, and having on the fore and middle finger of his right hand a piece of tarred leather, passes each broad side of the type smartly over the stone, so dextrously, as to be able to rub 2000 types in an hour. The types are now conveyed to a boy, who sets them up in lines in a long shallow frame, with their faces uppermost. This frame, containing a full line, is put into the *dresser's* hands, who polishes them on each side, cuts a groove or channel in the bottom of each, and renders them perfectly symmetrical. Each letter is finally tied up in lines, and a proportionate number of each sort being put together, a *fount of type* is ready for the printing-office.

TY'PHUS, in medicine, a species of continued fever, characterized by great debility, a tendency in the fluids to putrefaction, and the ordinary symptoms of fever. It chiefly attacks those who have been weakened by any previous debilitating cause, or who are confined in unwholesome and damp situations.

TYPOG'RAPHY. [See PRINTING.]

TYP'OLITE, in natural history, a stone or fossil which has on it impressions or figures of plants and animals.

TY'RANT, one who exercises arbitrary or excessive power. A monarch or other ruler who by injustice or cruel punishment, or the demand of unreasonable services, imposes burdens and hardships on those under his control, which law does not authorize, and which are repugnant to the dictates of humanity.——The word *tyrant*, in its original signification, merely meant an *absolute* ruler; but the abuse of the office led to a different application of the word.

TYRO'SIS, in medicine, a disorder in the stomach occasioned by the milk found curdled in it.

U.

U, the twenty-first letter and the fifth vowel of the alphabet, is generally pronounced nearly like *eu* shortened or blended; as in *annuity, enumerate, mute, duke, rule, infuse.* In some words, as in *bull, pull, full,* the sound of *u* is that of the Italian *u*, the French *ou*, but shortened. Its other sound is heard in *tun, run, rub, snub,* &c.

UBIQUITA'RIANS, in ecclesiastical history, a sect of Lutherans who sprung up in Germany about the year 1590, and maintained that the body of Jesus Christ is *(ubique)* omnipresent, or in every place at the same time.

U'KASE, in Russia, a proclamation or imperial order published.

UL'CER, in medicine, a purulent solution of continuity in any of the soft parts of the body, attended with a secretion of pus, or some kind of discharge. Ulcers arise from a variety of causes, and are variously denominated, as *fistulous, gangrenous, cancerous, scrophulous, carious,* &c.

ULE-TREE, in botany, the *Castilla*, a genus of trees, whose milky juice yields that kind of elastic gum called by the Mexicans *ule.*

U'LEX, in the Linnæan system, a genus of plants, class 17 *Diadelphia*, order 4 *Decandria.* Also, the name of a shrub mentioned by Pliny, the ashes of which were used as a lye in separating gold from all the substances with which it was mixed.

UL'MIN, in chemistry, a very peculiar substance, which exudes from a species of elm, the *ulmus nigra.* In its external appearance it resembles gum. It is solid, hard, of a black colour, and possesses considerable lustre.

UL'NA, in anatomy, the larger bone of the fore-arm, reaching from the elbow to the wrist: it is large at its upper extremity, and grows gradually smaller towards the wrist. Its chief use seems to be to support and regulate the motions of the radius.

UL'NAR, in anatomy, an epithet for the artery and vein belonging to the *ulna.*

ULTIMA'TUM (from *ultimus*, last), in modern diplomacy, the final conditions offered for the settlement of a dispute, or the basis of a treaty, between two governments. The word is also used for any final proposition or condition.

UL'TRA, a prefix to certain words in modern politics, to denote those members of a party who carry their notions to excess. In 1793, those persons in France were called *ultra-revolutionists*, who demanded much more than the constitution

they adopted allowed. When the Bourbons returned to France in 1815, the words *ultra-royalists* and *ultra-liberals* were much used, and have become common wherever political parties exist.

ULTRAMARI'NE, in painting, a valuable pigment affording a beautiful sky-blue colour.——Its name *ultramarine* is derived from being brought from beyond sea, that is to say, from Hindostan and Persia, and it was originally obtained only from the rare mineral *lapis lazuli*.——*Ultramarine ashes*, a pigment which is the residuum of lapis lazuli, after the ultramarine has been extracted.

ULTRAMONTANE, an epithet applied to countries which lie beyond the mountain: thus France, with regard to Italy, is an ultramontane country.

UL'VA, in botany, a genus of mosses, consisting of a merely foliaceous substance formed into long cylindrical tubes.

UM'BEL, in botany, a sort of inflorescence, which consists of a number of flower-stalks or rays spreading from a common centre. It is simple or compound; in the latter, each peduncle bears another little umbel or umbellicle. Hence *umbellate* and *umbelliferous*, bearing umbels.

UMBELLATÆ, the 45th of the Linnæan natural orders, comprehending umbelliferous plants, or those which have flowers in the form of an *umbel*, as fennel, dill, &c.

UM'BER, in painting, a pigment affording a fine dark-brown colour. It is a dusky-coloured earth, or ore, and was formerly brought from *Umbria*, in Italy. It is used in two states; the first, its natural one, with the simple precaution of levigation, or washing; the second, that in which it is found after being burnt. The hues of burnt and unburnt umber greatly differ from each other.——In ornithology, a fowl of the grallic order, inhabiting Africa.——In ichthyology, a fish of the truttaceous kind, called also the *grayling*; a fresh-water fish of good flavour.

UMBIL'ICAL, in anatomy, an epithet for whatever pertains to the navel; as *umbilical vessels*, *umbilical region*.——In botany, *umbilical vessels* are the small vessels which pass from the heart of the seed into the side seed-lobes, and are supposed to imbibe the saccharine, farinaceous, or oily matter which is to support the new vegetable in its germination and early growth.

UMBIL'ICATE, in botany, formed in the middle like a navel; as a flower, fruit, or leaf.

UM'BO, the boss or protuberant part of a shield.

UMBO'LDILITE, a recently discovered Vesuvian mineral, whose primitive form is a right rectangular prism, with a square base, and of a greenish yellow colour, inclining to brown.

UMBREL'LA, a canopy or skreen carried over head in hot climates as shelter from the sun, and in all climates as shelter from the rain. It is formed of silk, cotton, or other material, extended on strips of elastic whalebone, fastened to a stick. Umbrellas are of Asiatic origin. They were first introduced in London about 1775, and are now become articles of general use and extensive manufacture.

UN, in philology, a particle of negation, giving to words to which it is prefixed a negative signification. *Un* and *in* were formerly used indifferently for this purpose; but the tendency of modern usage is to prefer the use of *in*, in some words, where *un* was before used. It is prefixed generally to adjectives and participles, but sometimes also to verbs, as in *unbend*, *unbind*, &c.

U'NA VO'CE [Latin], with one voice; unanimously.

UNBELIE'F, in the sense used in the New Testament, signifies a disbelief of the truth of the Gospel, and a distrust of God's promises, &c.

UN'CIAL, pertaining to letters of a large size, used in ancient manuscripts.

UN'CIFORM, in anatomy, an epithet for a bone *(os unciforme)*, being the last bone of the second row of the carpus or wrist; so named from its hook-like process, which projects from the palm of the hand.

UN'CINATE, in botany, hooked at the end.

UNCTION, the anointing with consecrated oil, a practice among the Jews in consecrating kings and priests; also still in use at coronations: and is one of the seven sacraments of the Catholic church. It is performed, in cases of mortal disease, by anointing the head, hands, and feet with oil consecrated by the bishop, and accompanied with prayers. The anointing of persons who are on their death-bed is called *extreme unction*.

UNDERSTAND'ING, the intellectual faculty, or that faculty of the human mind by which it apprehends the real state of things presented to it, or by which it receives or comprehends the ideas which others express and intend to communicate.

UNDERWRITER, one who undersigns a policy of insurance on a ship or its cargo, at a certain rate per cent.

UNDULATION, a waving motion or vibration; as, the *undulations* of water or air, or the *undulations* of sound. The undulations of a fluid are propagated in concentric circles.——In surgery, *undulation* denotes a certain motion of the matter of an abscess when pressed, which indicates its maturity or fitness for opening.

UN'GUENT, in medicine, a soft composition used as a topical remedy, as for sores, burns, &c. An unguent is softer than a cerate, but of a firmer consistence than a liniment.

UNGUICULATE, in botany, like a claw; having a narrowed base, as the petal in a polypetalous corolla.

UN'GULA, in geometry, a section or part of a cylinder, cut off by a plane oblique to the base.

UNICAP'SULAR, in botany, having one capsule to each flower, as a pericarp.

U'NICORN, an animal with one horn. According to an examination of the ac-

CATHOLICS DERIVE THEIR OPINION OF THE EFFICACY OF EXTREME UNCTION FROM THE APOSTLES' PRAYING WITH AND ANOINTING THE SICK.

counts given, in ancient and modern times, of the unicorn, the opinion of its fabulous character, which has prevailed since the time of Buffon, does not seem to rest on sufficient grounds. In the country of the ancient Meroe, says Von Zach, a beast of this description is found, of the size of a cow, and the form of an antelope; and the male has upon its forehead a long and straight horn.

UNIF'LOROUS, in botany, bearing one flower only.

UNIFORM'ITY, Act of, the act of parliament by which the form of public prayers, administration of sacraments and other rites, is prescribed to be observed in all the churches. (1 Eliz., and 13 and 14 Car. II.)

UNILA'BIATE, in botany, having one lip only, as a corolla.

UNILAT'ERAL, in botany, an epithet for flowers growing only on one side of the common peduncle, as a *unilateral raceme*.

UNILIT'ERAL, consisting only of one letter.

U'NION, or *Act of Union*, in politics, the act by which Scotland was united to England, or by which the two kingdoms were incorporated into one, in 1707. Also, the legislative union of Great Britain and Ireland, in 1801.—The United States of America are also sometimes called *the Union*. ——Among painters, *union* denotes a symmetry and agreement between the several parts of a painting.——In architecture, harmony between the colours in the materials of a building.——In ecclesiastical affairs, the combining or consolidating of two or more churches into one.——In surgery, *union by the first intention*, signifies the process by which the opposite surfaces of recent wounds grow together and unite without suppuration, when they are kept in contact with each other.

U'NISON, in music, a coincidence or agreement of sounds, proceeding from an equality in the number of vibrations made in a given time by a sonorous body. Unison consists in sameness of degree, or similarity in respect to gravity or acuteness, and is applicable to any sound, whether of instruments or of the human organs, &c.

U'NIT, in mathematics, any known determinate quantity, by the constant repetition of which any other quantity of the same kind is measured.

UNITA'RIANS, in ecclesiastical history, a sect who deny the doctrine of the Trinity, and ascribe divinity to God the Father only. *Unitarianism* in England dates almost as far back as the Reformation; and under the names of Arianism and Socinianism, its followers have at times endured much persecution. Unitarians profess to derive their views from Scripture, and to make it the ultimate arbiter in all religious questions; and they assert that, interpreted according to the settled laws of language, the uniform testimony of the sacred writings is, that the Holy Spirit has no personal existence distinct from the Father, and that the Son is also a derived and dependent being.

UNITED BRETHREN. [See Moravians.]

U'NITY, in theology, is of two kinds, *unity of faith*, and *unity of spirit*. Unity of faith, is an equal belief of the same truths of God, and possession of the grace of faith in like form and degree. Unity of spirit is the oneness which subsists between Christ and his saints, by which the same spirit dwells in both, and both have the same disposition and aims.

U'NIVALVE SHELLS, in conchology, those of a single piece, as snails, &c., all of which possess locomotion.

UNIVER'SALISTS, in theology, those who hold the doctrine that all men will be saved or made happy in a future life.

U'NIVERSE, the collective name of heaven and earth; or totality of space, and all its material contents and phenomena, of whose boundless extent and smallest parts, finite beings can have no just idea; but as far as we can discover, it is filled with an ethereal fluid, in which masses of matter are equally disposed throughout space, which masses, like our sun, act as centres of motion, excite luminosity, and transfer motion and momenta to subordinate spheres, like our earth, each centre being millions of millions of miles distant from the others. It appears, too, that these centres form among themselves distinct clusters of countless thousands of centres, whose distance from our system is so vast, that although the clusters are trillions or quadrillions of miles in diameter, they do not appear, through the best telescopes, more than an inch in diameter. [See Astronomy, Planets, &c.] We of course know little of the universe by actual inspection: its infinity escapes the grasp of our limited vision; but reasoning leads us to conclusions far beyond the reach of observation. We first become acquainted with our own globe, and with the other planets revolving with it round the sun; and from this little speck in the universe we draw our inferences as to the rest. In our own system, we see the sun forming a fixed centre, about which the earth and the other planets, with their moons, regularly revolve. Further observation teaches us that the other planets of the solar system resemble the earth in many respects; and it also appears probable that the fixed stars are bodies like our sun, since they shine by their own light, and never change their relative positions. Wherever we turn our eyes, we see order, connexion, and stability; and we suppose these laws to embrace the whole universe, which thus forms a harmoniously framed whole.

UNIVER'SITY, a name applied to a national establishment for a liberal education, wherein professors in the several branches of science and polite literature are maintained, and where degrees, or honours attached to the attainments of scholars, are conferred. Such an establishment is called a *university* or *universal school*, as intended to embrace the *whole* compass of study. The universities of Great Britain

are seated at Oxford, Cambridge, St. Andrew's, Glasgow, Aberdeen, and Edinburgh. They are governed by chancellors, vice-chancellors, proctors, and beadles; and every college has its master and tutors; there are also public lectures of professors in every established branch of knowledge. The students and all the members wear an ancient costume, consisting of trencher-caps and gowns, varied according to their degrees, which are bachelors of arts, divinity, law, music, medicine; masters of arts, and doctors of divinity, law, and physic. The London University and King's College, are two collegiate establishments in the metropolis, of recent foundation, which may probably be the precursors of others. Universities in their present form, and with their present privileges, are institutions comparatively modern. They sprang from the convents of regular clergy, or from the chapters of cathedrals in the church of Rome, where young men were educated for holy orders, in that dark period when the clergy possessed all the little erudition which was left in Europe. Probably in every town in Europe where there is now a university, which has any claim to be called ancient, these convents were seminaries of learning from their first institution; for it was not till the more eminent of the laity began to see the importance of literature and science, that universities distinct from convents were founded, with the privilege of admitting to degrees, which conferred some rank in civil society. These universities have long been considered as lay corporations; but as a proof that they had this kind of ecclesiastical origin, it will be sufficient to observe, that the pope arrogated to himself the right of vesting them with all their privileges; and that, prior to the Reformation, every university in Europe conferred its degrees in all the faculties by authority derived from a papal bull. The most ancient universities in Europe are those of Oxford, Cambridge, Paris, Salamanca, and Bologna; and in the two English universities, the first-founded colleges are those of University, Baliol, and Merton, in the former, and St. Peter's in the latter. Oxford and Cambridge, however, were universities, or, as they were then called, studies, some hundreds of years before colleges or schools were built in them; for the former flourished as a seminary of learning in the reign of Alfred the Great, and the other, if we may credit its partial historians, at a period still earlier. The universities of Scotland are four, St. Andrew's, Glasgow, Aberdeen, and Edinburgh. In Ireland there is but one university, viz. that of Dublin, founded by queen Elizabeth, and very richly endowed.—We shall now proceed to explain the various component parts of an university; in doing which we will first speak of Cambridge; and conclude with an account of the course of instruction pursued at Oxford. Every college is in itself a corporate body, and governed by its own statutes, which must, however, concur with the general laws of the university, formed by Elizabeth on previous privileges, and confirmed by parliament, consequently they are the basis of all modern regulations. Each of the colleges sends deputies both for the executive and legislative branches of the government, and the place of their meeting is termed the senate-house. Masters of arts, doctors in divinity, civil law, and physic, who have their names inscribed on the college boards, and are resident at Cambridge, possess votes in the above assembly. The senate consists of two classes, which are called regents or non-regents, with a view to some particular offices assigned by the statutes of the university to the junior division. Masters of arts of less than five years' standing, and doctors under two, form the regent, or upper-house; and it has besides the term of white-hood house, from the circumstance of the members having their hoods lined with silk of the above colour: the remainder constitute the non-regent, or black-hood house: doctors of more than two years' standing, and the public orator of the university, are entitled to vote in either of those houses at pleasure; exclusive of which there is a caput, or council, composed of the vice-chancellor, a doctor of each faculty, and two masters of arts, who are representatives of the houses already mentioned. The vice-chancellor being a member of the caput by virtue of his office, his election to the former only takes place annually, on the 4th of November, when the senate choose him from the masters of the sixteen colleges; but that of the caput occurs after the same interval, on the 12th of October, in the following manner: the vice-chancellor and the two proctors severally nominate five persons, and from the fifteen thus proposed, the heads of colleges and doctors select five, generally preferring the vice-chancellor's list. This officer calls the meetings of the senate by a printed notice, which specifies the cause, and must be suspended in the halls of the several colleges three days previously to the time appointed. A congregation of the members thus summoned may proceed to business, and a congregation consists of any number above twenty-six, including the proper officers of the senate, who are compelled to attend on oath personally, or by their legal deputies. Exclusive of these casual meetings, there are statutable congregations, for conferring degrees, electing officers, &c. &c. which are held without notice. A degree cannot be conferred without passing a grace for the purpose; nor are they ever conferred, unless the persons receiving them previously sign a declaration, that they are *bond fide* members of the church of England as by law established. All the officers of the university, forming the executive part of it, are chosen by the senate, the principal of whom is the chancellor, who presides in all cases, and to whom is confided the sole power of governing, except in cases of mayhem and felony; he is besides expected to protect and preserve all the rights and privileges of the institu-

CATHERINE-HALL, BUILT, 1475; JESUS COLLEGE, 1497; ST. JOHN'S COLLEGE, 1516; MAGDALEN COLLEGE, 1542; TRINITY COLLEGE (THE LARGEST), 1546.

tion, and to see that strict and impartial justice is administered in every case to the members; and that all this may be insured, the office is entrusted to noblemen of the highest rank. Other parts of his official duty are, the convoking of assemblies, the sealing of diplomas, letters of degrees, provisions, &c. given by the university. The high steward is the next officer in consequence to the chancellor, and to him is granted the power to superintend the trial of students accused of felony, within the limits of the jurisdiction, which is one mile in every direction from the suburbs of the university; he is also empowered to hold a leet, according to the established charter and custom, and is permitted to have a deputy. The vice-chancellor's office is explained by his title; but he acts as a magistrate for the university and county, and must be the head of some college. The regents elect two proctors, who are officers of the peace, and superintend the behaviour and discipline of all the pupils, and may search for and commit to prison those abandoned females who contribute to corrupt the morals of the students at the university. Exclusive of these purposes, the proctors are appointed to attend the congregations of the senate, when they stand in scrutiny with the chancellor or vice-chancellor to take the open suffrages, verbally and written, which they read, and finally pronounce the assent or dissent. Although there are some particular parts of the duties of these officers which may be considered very unpleasant, yet they must be masters of arts, and are regents by virtue of their office, and are enabled to determine the seniority of all masters of arts at the time of their taking that degree. Other officers are termed moderators, taxors, scrutators, a public orator, a commissary, a registrar, esquire bedells, and librarians. The moderators act as the substitutes of the proctors in the philosophical schools, and alternately superintend disputations and exercises there, and the examinations for the degree of bachelor of arts. The taxors, like the moderators, are masters of arts and regents by virtue of their office, which is to regulate the markets, the assize of bread, the exactness of weights and measures, and to summon all offenders into the commissary's court. The scrutators are non-regents, and their functions are to attend at every congregation, to read the graces in the lower house, where they collect the votes, and publicly pronounce the assent or dissent of that house. The public orator holds an office which is considered as one of the most honourable in the university; he is, in fact, the medium of the senate upon all solemn occasions, reading and recording all communications to and from the senate, and presenting all honorary degrees, accompanied by a suitable speech. The commissary holds his office under the chancellor, and officiates as assessor, or assistant, in the vice-chancellor's court; besides which, he holds a court of record, where all causes are subject to the statute and civil law and custom of the university, and the persons for whom it is held are all privileged, and scholars under the degree of master of arts. The registrar attends himself, or by deputy, all congregations, to give directions, if necessary, for the correct wording of such graces as are propounded, and to draw up any that the vice-chancellor may appoint; to receive them when passed through both houses, and to register them in the archives of the university; exclusive of which his office requires him to record the seniority of those who proceed annually in the arts or faculties, agreeably to the schedules furnished to him by the proctors. The esquire bedells attend the vice-chancellor during all public solemnities, preceding him with their insignia of silver maces; they also attend the doctors when present in the regent house; and, besides many other duties of a similar nature, they attend the professors and respondents in each faculty from their several colleges to the schools, collect penalties and fines, and summon all members of the senate to the chancellor's court. We have now mentioned the different officers of an English university, with as much brevity as the nature of the subject will permit; at the same time we may observe, that none can be more important, or can more deserve explanation in this place. There are two courts of law in the university of Cambridge, viz. the consistory court of the chancellor, and the consistory court of the commissary. The university sends two members to the imperial parliament of the united kingdom, who are chosen by the collective body of the senate. A council, termed the university council, appointed for various purposes, is composed by a grace of the senate, and a solicitor is nominated by the vice-chancellor. The syndics, chosen from the members of the senate, conduct all special affairs, such as framing laws, regulating fees, and inspecting the library, the printing, buildings, &c. &c. Those of the university press cannot proceed to business unless the vice-chancellor and four others are present in the parlour of the office. All the professors of the sciences are allowed stipends, which are derived from various sources, composed of the university chest, sums from government, or from estates appropriated for that purpose.—Oxford is an establishment for the purposes of education, which corresponds to a federal body united for political purposes. As, in this latter case, the several states have separate jurisdictions, separate duties, and, to a certain extent, separate interests, so the several colleges and halls which compose the academical body, have each its own private regulations for the education of its members, but all contribute to the university education. This may be brought under the heads of public examinations and college preparation. In its early constitution, and in the gradual additions which for many ages were made to it, the system now followed in the German universities was kept in view, and professorships or readerships

in the different arts and sciences were established; but these university officers are no longer the main sources of instruction. The demand for instruction created by the degree examination, is met almost exclusively by lectures delivered in the several colleges and halls, or, rather, by private tutors in the colleges and halls; so exclusively indeed, that, although some knowledge of Greek is essential for a degree, and a considerable proficiency for the higher class degrees, the Greek professor has no lectures. What is actually required for a degree of bachelor of arts is, that the student should display some acquaintance with the facts and doctrines of the Christian religion, and especially with the peculiar tenets of the church of England, as set forth in its articles; some proficiency in the Greek and Latin languages, in one or more of the ancient philosophical treatises, or, in lieu of this, in a portion of ancient history; some knowledge, also, either of the elements of logic or of the elements of geometry. The statute, however, contemplates the probability of a much higher standard of qualification in a portion of the students; and for these it provides honours additional to that of a mere degree. Their names are printed, arranged in four classes, according to a fixed standard of merit for each class. The candidate is permitted to name the book in which he wishes to be examined; and the examiners are, besides, at liberty to examine in any books which they may select. The mathematical examinations are conducted principally by means of printed questions, answered in writing. A candidate for the first class may be stated generally to have acquired a knowledge of, 1. the elements of analytical geometry and trigonometry; 2. the differential and integral calculus and its applications; 3. mechanics, including the principles of its application to the solar system, embracing the substance of the three first sections of Newton's *Principia*, which are also read in the original forms; 4. the principle of hydrostatics, optics, and plane astronomy. The examinations take place twice a year. Prizes are given for the encouragement of compositions in prose and verse, in Latin and English. There are also public scholarships, which operate as rewards and encouragements of general proficiency or particular acquirements. These include classical literature, mathematics, Hebrew, and the law. The university also affords facilities for the acquirement of various branches which do not enter into the qualification for a degree. Thus the several professors of geology, chemistry, and many other branches of science, are always provided with classes, often with numerous ones. We now proceed to the college preparation for the public examinations. It is this that really constitutes the Oxford education. The process of instruction in the college is by no means of recitations. Every head of a house appoints a certain number of tutors for this purpose. Questions are put by the tutor, and remarks made by him on the book which is the subject of study. He also gives directions respecting the proper mode of studying. The students usually attend two, three, or four tutors, who thus give instruction in different branches. The college tutor, moreover, has interviews, from time to time, with his pupils, separately, for the sake of ascertaining the individual's state of preparation for the public examination, assisting him in his difficulties, &c. Besides these college tutors, however, there are private tutors, who superintend the studies of individuals, and prepare them for attendance on the exercises of the college tutors. These private tutors are particularly useful to that large class of students who come to college insufficiently prepared. The course of college instruction closes, at the end of each term, with a formal examination of each member separately, by the head and tutors, who attend for this purpose. This summing up of the business of the term is called, in the technical language of the place, *collections*, or *terminals*. Each student presents himself in turn, with the books in which he has received instruction during the term, and, in many colleges, with the essays and other exercises which he has written, his analyses of scientific works, abridgments of histories, and the like. In some colleges the students are required to present, for their examination, some book also, in which they have not received instruction during the term. Besides the other studies pursued in the colleges, the students write weekly short essays on a given subject, occasionally interchanged with a copy of Latin verses, for those skilled in versification. The liberality of donors has enabled the colleges to provide indirectly for the promotion of study by means of exhibitions, scholarships, and fellowships. Every college and hall examines, if it thinks fit, its own candidates for admission, and pronounces, each according to a standard of its own, on their fitness or unfitness for the university.—Such is the general outline of an English university, a constitution the work of ages, with numerous perfections, and with very few errors, whatever prejudice may advance to the contrary. Superficial knowledge is held in no kind of estimation at either of our great seminaries; the very essence and causes, as well as effects, must be explored to satisfy the expectations of the various professors, formed by long experience and unexhausted assiduity; and we accordingly find, that from these pure fountains of academic lore the most profound linguists, the most able theologians, mathematicians of exemplary skill and assiduity, philosophers, poets, historians, logicians, and men of science, in the most comprehensive signification of the word, are continually springing. To these classic haunts every member of the community owes a debt of gratitude. To the system of instruction there pursued, and to the collegiate discipline—in spite of all the vulgar clamour

NO HEAT THAT WE CAN RAISE IS SUFFICIENT TO MELT URANIUM INTO A MASS; ITS MALLEABILITY IS CONSEQUENTLY UNKNOWN.

IN 1572, GREGORY XIII. MADE THE SOCIETY OF ST. URSULA A RELIGIOUS ORDER, SUBJECT TO THE RULES OF ST. AUGUSTINE.

and prejudice that have been raised against our universities—are we mainly indebted, for the manly patriotism and sound policy which distinguish the most eminent members of the British senate, for the graces of forensic eloquence which adorn the bar, and for the pious exhortations which are breathed with holy fervour from the pulpit. May anarchy never raise its sacrilegious hand to despoil our universities of their well-earned honours, or to circumscribe the sphere of their vast utility!

U'PAS TREE (*Antiaris Toxicaria*), in botany, a tree rendered famous for its poisonous qualities, which, however, have been very much exaggerated. It was long believed in Europe, that this tree was a solitary one situated in a valley in Java, the pestilential qualities of which were so great, that neither herb nor animal could live within many miles of its circle, and that criminals alone were sent to gather poison from it, few of whom ever returned. Dr. Horsfield (in the Batavian Transactions, vol. vii.) was among the first to give a correct account of the poison-tree of Java. He says that, though the ordinary accounts of it are fabulous, still there exists a tree in Java, from the sap of which a fatal poison is prepared. This tree is the "Anchar," which grows in greatest abundance at the eastern extremity of the island. The stem is cylindrical, perpendicular, and rises completely naked to the height of sixty or seventy, or even eighty feet; near the surface of the ground it spreads obliquely like many of our forest trees. The bark is whitish, slightly bursting into longitudinal furrows. Near the ground this bark is, in old trees, more than half an inch thick, and when wounded, yields copiously the milky juice from which the poison is prepared.

UP'LAND, a term for land elevated above the meadows and plains which lie on the banks of rivers, near the sea, or between hills. It is opposed to meadow, marsh, swamp, &c.; and, like downs, or a gentle hilly country, *uplands* are particularly valuable as affording pasture for sheep.

U'RANITE, in mineralogy, an ore or phosphate of uranium, called also *uran-glimmer*. It is of a pale gold colour, or yellowish brown; sometimes of an apple-green or emerald hue; and occurs crystalized in rectangular prisms, or in imperfect octahedrons.

URA'NIUM, a metal discovered in the mineral called pechblende. It is soft and brittle, but hardly fusible before the blow-pipe; but with phosphate of soda and ammonia it melts into a grass-green glass.

URAN-O'CHRE, in mineralogy, pechblende, an ore of uranium, containing the metal in an oxydized state. It is brown, grayish, black, and brownish black; occurring massive, globular, reniform, and pulverulent.

URANOL'OGY, a discourse or treatise on the heavens; or, in other words, the sublime science of astronomy, with all its phenomena, discussed philosophically.

URA'NUS, the name generally given by the continental astronomers to the *Georgium Sidus*, or planet *Herschel*.

UR'CEOLATE, in botany, an epithet for a calyx or corolla when swelling out, or shaped like a pitcher.

U'RETER, in anatomy, the membranous canal which conveys the urine from each kidney to the urinary bladder.

URE'THRA, in anatomy, a membranous canal or tube which serves as a passage for the discharge of the urine.

U'RIC ACID, in chemistry, the acid obtained from urinary calculi. It is also called *lithic acid*.

URN, in antiquity, a kind of vase of a roundish form, but largest in the middle, destined to receive the ashes of the dead. The substances employed in the construction of these vessels are numerous. Amongst them are gold, bronze, glass, terra cotta, marble, and porphyry. Many have been discovered bearing inscriptions; others with the name only of the party to whose remains they were devoted.—It was also customary with the Romans to put the names of those who were to engage at the public games, into *urns*, taking them in the order in which they were drawn out. Into such a vessel also they threw the notes of their votes at the elections.——The urn *(urna)* was also a Roman measure for liquids, containing about three gallons and a half, wine measure. It was half the *amphora*.

UR'SA, in astronomy, the name of two northern constellations, namely, *Ursa Major* and *Ursa Minor*, the Great and Little Bear

UR'SULINES, or NUNS OF ST. URSULA, a sisterhood founded by St. Angela of Brescia, in 1537, at first without being bound to the rules of the monastic life, but devoting themselves merely to the practice of Christian charity and the education of children. Many governments, which abolished convents in general, protected the Ursulines on account of their useful labours, particularly in the practice of attending on the sick, and administering to their cure and their comforts: good creatures, forsooth, as the facetious Ingoldsby tells his readers in Bentley's Miscellany,

"Who don't take the vows; but half Nun and half Lay,
Attend you; and when you've got better, they say,
'You're exceedingly welcome! There's nothing to pay.'"

UR'SUS, in zoology, a genus of animals in the Linnæan system, including the bear, badger, &c.

URTICA MARI'NA, the SEA-NETTLE, in ichthyology, a species of *Medusa*. It appears, as floating on the water, to be a mere lifeless lump of jelly: it is of a whitish colour, with a cast of bluish-gray, and is of an orbiculated figure, convex in the middle on the upper side, flat on the under, and furnished with a fringe of filaments round the edge, resembling white hairs.

U'SANCE, in commerce, the time fixed for the payment of bills of exchange, reckoned either from the day on which the bill is accepted, or from that of its date, varying in different countries, and thus called, because wholly dependent on *usage*.

USH'ER, literally a "door-keeper;" being derived from the French "huissier." In Britain, *usher* is the name given to several public officers, in which sense it seems to be synonymous with sergeant. These ushers are in waiting, introduce strangers, and execute orders. Usher is also used as the denomination of an assistant to a school-master; where it seems to refer to his office of introducing the scholars to learning.

USTULA'TION, in pharmacy, the roasting or torrefying of moist substances over a gentle fire, so as to prepare them for pulverization. In metallurgy, *ustulation* is the operation of expelling one substance from another by heat.

USUCAP'TION, in the civil law, the acquisition of the title or right to property by the undisputed possession and enjoyment of it for a certain term prescribed by law.

U'SUFRUCT, in the civil law, the temporary use or enjoyment of lands or tenements; or the right of receiving the fruits and profits of an inheritance, without a power of alienating the property.

U'SURY, a compensation or reward for money lent. In this sense it is merely equivalent to *interest*. In the common business of life, however, it rarely has this signification; but is chiefly used in an odious sense, to express an exorbitant or illegal compensation for money lent, in contradistinction to legal interest.

UTILITA'RIANS, a name given to the school of certain modern philosophers, who, following the dogmas of Jeremy Bentham, test the value of all institutions and pursuits by the principle of utility, that is, the promotion of the greatest happiness of the greatest number.

UTRICULA'RIA, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. Plants of this genus, called in English *bladderwort*, have tuberous roots like the potato.

UVA'RIA, in botany, a genus of plants, class 13 *Polyandria*, order 7 *Polygamia*. Plants of this genus are climbing shrubs or trees, and natives of India.

U'VULA, in anatomy, a soft, round, spungy body suspended from the palate, near the foramina of the nostrils, over the glottis. Its principal use is to break the force of the cold air, and prevent its entering too precipitately into the lungs.

UVULA'RIA, in botany, a genus of plants, class 6 *Hexandria*, order 1 *Monogynia*.

U'VULA-SPOON, in surgery, an instrument to be held just under the uvula for the purpose of conveying any substance into the cavity behind.

V.

V, the twenty-second letter of the alphabet, is a labial articulation, nearly allied to *f*, being formed by the same organs; but *v* is vocal, and *f* is aspirate, and this constitutes the principal difference between them. V has one sound only, as in *vain, very, vote, vanity*. Though *v* and *u* have as distinct uses as any two letters in the alphabet, they were formerly considered as one letter; and in some encyclopædias and dictionaries the absurd practice of arranging the words which begin with these letters is still continued. As a numeral, V stands for 5; and with a dash over it, in old books, for 5000.

VA, in music, Italian for "go on," as *va crescendo*, go on increasing.

VACA'TION, in law, the period between the end of one term and the beginning of another: and the same in the universities. It also denotes the time when a see or other spiritual dignity is vacant; as, "during the *vacation* of a bishopric, the dean and chapter are guardians of the spiritualities."

VACCINA'TION, in medicine, inoculation with the cow-pox, intended as a preservative against infection from the smallpox. [See Cow-Pox.]

VACCIN'IUM, in botany, a genus of plants, class 8 *Octandria*, order 1 *Monogynia*. The species are shrubs, or trees, as the bilberry, cranberry, &c.

VAC'UUM, in physics, a space devoid of all matter, as was generally conceived by the ancients to exist. The question whether there is such a thing as an absolute *vacuum* in nature, or not, has given rise to disputes among philosophers in all ages. ——The *Torricellian vacuum* is produced by filling a tube with mercury, and allowing it to descend till it is counterbalanced by the weight of the atmosphere, as in the barometer invented by Torricelli.

VA'DE-MECUM (from the Latin, signifying *Go with me*), a favourite book or other thing that a person constantly carries with him.

VA'GINATED, in botany, sheathed; invested by the tubular base of the leaf, as a stem.

VAGINOPEN'NOUS, having the wings covered with a hard case or sheath, as insects.

THERE IS SOMETHING BEYOND MERE UTILITY NECESSARY EVEN IN THIS LIFE, OR THE INTELLECTUAL CHARACTER IS NOT VERY EXALTED.

VAIR, or VER'RY, in heraldry, one of the two furs, which are so disposed as to represent little shields, cups, or bells. When the bases of these shields are so ranged as to meet each other, it is called *countervair*.

VALENTINE'S DAY, the 14th of February, a festival in the calendar in honour of St. Valentine, who suffered martyrdom in the reign of the emperor Claudius. He was eminently distinguished for his love and charity; and the custom of choosing valentines, or special loving friends, on this day, is by some supposed to have thence originated. The following solution is, however, the more probable one. It was the practice in ancient Rome, during a great part of the month of February, to celebrate the Lupercalia, which were feasts in honour of Pan and Juno, whence the latter deity was named Februata, or Februalis. On this occasion, amidst a variety of ceremonies, the names of young women were put into a box, from which they were drawn by the men, as chance directed. The pastors of the early Christian church, who by every possible means endeavoured to eradicate the vestiges of pagan superstitions, and chiefly by some commutations of their forms, substituted, in the present instance, the names of particular saints, instead of those of the women; and as the festival of the Lupercalia had commenced about the middle of February, they appear to have chosen Valentine's-day for celebrating the new feast, because it occurred nearly at the same time.

VALE'RIAN, in botany, a plant of the genus *Valeriana*, of many species. The root of the officinal valerian has an acrid and somewhat bitter taste, and a strong disagreeable odour. It has been long extolled as an efficacious remedy in epilepsy, and is found serviceable in a variety of nervous complaints, but more especially in epileptic and hysterical affections. Cats are so exceedingly fond of this plant, that it is difficult to preserve it in a garden; and ratcatchers employ the roots to draw the rats together, as they do oil of anise.

VALLA'RIS CORO'NA, in antiquity, a golden crown which the Roman generals bestowed on him who, in attacking the enemy's camp, first broke in upon the lines or pallisades. It was also called *Corona castrensis*.

VAL'LUM, among the Romans, was the parapet which fortified their encampments.

VALO'REM, or AD VALOREM, according to the value; as, an *ad valorem* duty.

VAL'UE, in commerce, the price or worth of any purchasable commodity. The intrinsic value denotes the real and effective worth of a thing, and is used chiefly with regard to money, the popular value of which may be raised or lowered, at the pleasure of the sovereign; but its real or intrinsic value, depending wholly on its weight and purity, is not at all thereby affected.—The value of commodities is regulated principally by the comparative facility of their production, and partly on the relation of the supply and demand. But many other causes operate to raise or depreciate the value of an article; as monopolies, fashion, new inventions, the opening of new markets, or the stoppage of commercial intercourse through war, &c. And, in fact, in all countries where merchants are possessed of large capitals, and where they are left to be guided in the use of them by their own discretion and foresight, the prices of commodities will frequently be very much influenced, not merely by the actual occurrence of changes in the accustomed relation of the supply and demand, but by the mere anticipation of them.——*Value*, in another sense, denotes those properties in a thing which render it useful or estimable: thus, for instance, the *real* or *intrinsic* value of iron is far greater than that of gold.

VALVE, in hydraulics, pneumatics, &c. is a kind of lid or cover of a tube or vessel, so contrived as to open one way, but which the more forcibly it is pressed the other way, the closer it shuts the aperture; so that it either admits the entrance of a fluid into the tube or vessel, and prevents its return; or admits its escape, and prevents its re-entrance.——*Safety-valve*, an orifice which opens to allow the escape of steam when at a pressure below the strength of the boiler, by which escape the boiler is prevented from bursting.——*Valve*, in anatomy, a membranous partition within the cavity of certain vessels of the body, to afford a passage to fluids in one direction, and prevent their reflux towards the place from whence they came.——In botany, the outer coat, shell, or covering of a capsule or other pericarp, or rather one of the pieces which compose it.——*Valves*, in conchology, the principal pieces of which a shell is composed. By their shells they are distinguished into *univalves*, or such as have only one piece; *bivalves*, two pieces; and *multivalves*, those that have three or more pieces.

VAM'PIRE, in zoology, a species of large bat, the *Vespertilio vampyrus* of Linnæus. It inhabits the East India isles, New Holland, Guinea, and Madagascar; and has been accused of destroying men and animals by sucking their blood. The same has been said of the *Vespertilio spectrum*, of South America; but the truth, says Cuvier, appears to be, that it inflicts only small wounds, which may probably become inflammatory and gangrenous from the influence of the climate. Some of the grossest superstitions have originated in the belief of *vampires*, or blood-sucking spectres, who having died under sentence of excommunication for sorcery, were supposed to rise from their graves, and suck the blood of those persons with whom in their lifetime they had been connected.

VAM'PLET, in archæology, a piece of steel, formed like a funnel, placed on tilting spears just before the hand to secure it, but which might be taken off at pleasure.

VANA'DIUM, in mineralogy, a newly-

discovered metal, first found in a lead mine at Zimapan, in Mexico, but subsequently (1830) discovered in Swedish iron, remarkable for its ductility, at Jaberg, in Sweden. *Vanadium* is white, and, when its surface is polished, it resembles silver considerably. It is easily reduced to a powder of an iron-gray colour, and is a good conductor of electricity. From it is obtained *vanadic acid*, and various salts of a fine azure blue colour when in solution.

VAN'DALS, a ferocious race, who, it is believed, were either a Sclavonic tribe, or came from the north of Germany, between the Elbe and the Vistula. During the 4th and 5th centuries they became very powerful, and, under Genseric, their king, overran Spain, Gaul, and Italy. They subsequently established themselves in Africa; but were eventually subdued by Belisarius, the celebrated Roman general in the reign of Justinian, who took their king, Gelimer, prisoner, and carried him to Constantinople in triumph.—From the ferocity of their character, and the havoc they made of the finest works of art, the words *Vandalism* and *Vandalic* have been applied to such acts as imply a rude and savage ferocity combined with a disregard of the advantages of civilization.

VANE, or WEATH'ERCOCK, a light body (generally a thin plate) placed on a spindle at the top of a church steeple, or other building, which turns with the wind and points to the part from which it blows. ——In ships, a piece of bunting used for the same purpose.

VA'POUR, in physics, an assemblage of vesicles, or little bubbles of water, filled with air, which, being raised by the action of heat, float in the atmosphere, and form what we call clouds. Dr. Halley attempted to estimate the vapour drawn from the Mediterranean during one sunny day; and, by calculating the surface of that sea, and making an experiment on a small quantity of water, he was led to suppose, that it might be at least 5280 millions of tuns. Dry winds, also, carry off even a larger proportion. It is by vapour redescending to the surface of the earth, in various forms, that all the phenomena of dew, rain, hail, and snow are produced. If the cold wind, or other cause, happen to act early enough to precipitate the vesicles, before they arrive at any considerable height, the drops, which in so short a descent do not unite to any considerable degree, are small; and thus is formed what we call *dew;* now, this precipitation regularly happening with respect to that vapour which rises late on a summer's day, a fall of dew is the natural consequence. If the vapour is more copious, and the height to which it rises somewhat greater, than that supposed above, mist or fog is produced; if higher still, *small rain.* If no cause of condensation occur, it accumulates into heavy clouds.

VA'POUR BATH, a machine for producing a profuse perspiration by means of exposing the body to the steam of hot water, which is usually promoted by friction. The general effect of this process is to relax the body, remove obstructions of the skin, alleviate pain and spasmodic contractions, and promote sleep. In the vapour bath, the stimulant power of heat is modified and tempered by the moisture diffused through the air; and it is generally acknowledged to be not only more safe, but more effectual than the hot water bath.

VA'RI, in zoology, a species of quadruped, the maucauco, or *Lemur catta* of Linnæus, having its tail marked with rings of black and white. It is a native of Madagascar.

VA'RIABLE QUAN'TITIES, in geometry and analytics, such as are either continually increasing or diminishing; in opposition to those which are constant and unchangeable.

VARIA'TION, in geography and navigation, a deviation of the magnetical needle from the true north point; called also *declination.* The causes of this variation are among inscrutable phenomena; but it is supposed to arise from some connexion between the obliquity of the ecliptic, and the causes of polarity, which are connected with the earth's motion, and a subordinate electrical action.——*Variation,* in music, the different manner of playing or singing the same air or tune, by subdividing the notes into several others of less value, or by adding graces, &c., yet so that the tune itself may be discovered through all its embellishments.——In grammar, change of termination of nouns and adjectives, constituting what is called case, number, and gender.——*Variation of the moon,* the third inequality observed in the moon's motion, by which, when out of her quadratures, her true place differs from her place twice equated.

VARICEL'LA, in medicine, the chicken-pox, a genus of diseases, class *Pyrexiæ,* order *Exanthemata* in Cullen's Nosology.

VARI'ETY, in natural history, any individual plant or animal that differs from the rest of the species in some accidental circumstances.

VARI'OLA, or SMALL-POX, in medicine, a genus of disease in the class *Pyrexiæ,* and order *Exanthemata,* of Cullen. It is a disease of a very contagious nature, supposed to have been introduced into Europe from Arabia, and in which there arises a fever, that is succeeded by a number of little inflammations in the skin, which proceed to suppuration, the matter formed thereby being capable of producing the disorder in another person. It makes its attack on people of all ages, but the young of both sexes are more liable to it than those who are much advanced in life. This destructive scourge of the human race has, of late years, been happily arrested by the discovery of the *variola vaccina,* or cow-pox. [See Cow-Pox.]

VA'RIOLITE, in mineralogy, a kind of porphyritic rock, in which the imbedded substances are imperfectly crystalized, or

SIXTUS V. HIGHLY EMBELLISHED THE EXTERIOR OF THE VATICAN, AND PREPARED THE GREAT SALOON WHICH CONTAINS A PART OF THE LIBRARY.

ATHIS ARE THE INSPISSATED JUICES OF PLANTS, AND USUALLY OCCUR EITHER PURE, OR IN COMBINATION WITH AN ESSENTIAL OIL.

are rounded, giving the stone a spotted appearance.

VARIO'RUM EDITIONS, in literature, editions of the Greek and Roman classics, in which the notes of different commentators are inserted.

VA'RIX, in medicine, an uneven swelling or dilatation of a vein.

VAR'NISH, any glutinous and glossy liquid, with which articles of furniture, &c. may be covered, to improve their appearance, or to defend them from injury. Varnishes are usually made with gums and spirit of wine; but as the materials on which they are used, and the purposes they are to answer, differ widely, they of course vary in a similar degree.

VARRO'NIAN SATIRE, a species of satire so called from the learned Varro, who first composed it. The style was free and unconfined, containing both prose and verse intermixed according to the fancy of the writer.

VA'SA, in botany, the vessels which serve to support the life of plants, which are the *vasa succifera*, or sap-vessels; *utriculi*, little bags usually full of a green pulp, which serve as reservoirs of the sap; and *tracheæ*, the air-vessels.

VAS'CULAR, pertaining to the vessels of animal or vegetable bodies; as, the *vascular* functions; the *vascular* system.

VASCULIF'EROUS, in botany, an epithet applied to such plants as have seed vessels divided into cells.

VASE, in architecture, an ornament placed on cornices, socles, or pediments, representing such vessels as the ancients used in sacrifices, &c. The Grecian artists gave to every vase the shape best adapted to its use, and most agreeable to the eye. A great number of these vessels have been preserved to the present day, and offer to artists models of the most beautiful forms. ——Among florists, the calyx of a plant, as the tulip, is called a *vase*.

VA'STUS, in anatomy, the name of two muscles, namely, the *vastus externus* and *internus*, situated on the outer and inner side of the thigh.

VAT'ICAN, a magnificent palace of modern Rome, built upon the Vatican hill, from which it derives its name. It was formerly the residence of the popes; and the conclaves for the election of cardinals are still held there. It is not a regular building, but contains 22 court yards, and, as is generally said, 11,000 rooms. There are the celebrated collections of pictures, and the museums; together with the far-famed *Vatican library*, which bears witness to the scientific spirit, or fondness for magnificence, of many successive popes, and is said to contain, among its treasures, ancient manuscripts from the time of Constantine the Great.

VAV'ASOR, an ancient title of nobility in England, said by Camden to be next below a baron.

VEA'DER, the 13th month of the Jewish ecclesiastical year.

VEC'TOR, in astronomy, a radius of a planet's orbit, drawn from the point of central force to the curve, which its varied reactions generate.

VEDA' (pron. *vedaw'*), the name of the collective body of the Hindoo sacred writings, which are divided into four parts or vedas.

VEDET'TE, in military affairs, a sentinel on horseback detached from the main body of the army, to discover and give notice of the enemy's movements.

VE''GETABLE, an organic body, destitute of sense and voluntary motion, but furnished with pores and vessels, by the aid of which it draws nourishment from the earth, &c., and in general propagating itself by seeds. Their forms are almost infinite in number, and many thousand genera are displayed in systems of botany, besides species and varieties of each. The largest kinds grow within the tropics, and they dwindle as they grow in colder regions, whether elevated, or to the northward or southward of the tropics. [See PLANT.] —In a more limited sense, vegetables are such plants as are used for culinary purposes. It has been a question much discussed among philosophers, in what way the various vegetable tribes were originally diffused over the surface of the earth; and three different hypotheses have been proposed. Linnæus supposed a single primitive centre of vegetation, whence all species of plants have been gradually dispersed over the globe by winds, rivers, currents, animals, &c. A second hypothesis is, that each species of plants originated in a primitive centre, of which there were several in different parts of the globe, each being the seat of a particular number of species. The third hypothesis is, that, wherever a suitable climate existed, there the vegetable tribes sprang up, and that plants of the same species were, from the first, spread over different regions. —— The *vegetable acids* are decomposed by a red heat. They are, in general, less liable to spontaneous decomposition than other vegetable substances. They are nearly all decomposed by concentrated hot nitric acid, by which they are converted into carbonic acid and water. There are at least twenty-five in number, the most important of which are the following: acetic acid, or vinegar, oxalic, tartaric, citric, malic, benzoic, gallic, boletic, moroxylic, meconic, and pectic acids. —— *Vegetable alkalies* comprehend those proximate principles which are possessed of alkaline properties. They all consist of carbon, hydrogen, oxygen, and nitrogen. They are decomposed with facility by nitric acid and by heat; and ammonia is always one of the products of the destructive distillation. They never exist in an insulated state in the plants which contain them, but are, apparently, in every case, combined with an acid, with which they form a salt more or less soluble in water. ——*Vegetable oils* are characterized by a peculiar unctuous feel, by inflammability, and by insolubility in water. They are divided into fixed and volatile oils, the former

of which are comparatively fixed in the fire, and therefore impart a permanent stain to paper; while the latter, owing to their volatility, produce a stain which disappears by gentle heat.

VE'GETABLE MAR'ROW, the fruit of a plant of the gourd kind, originally growing in Persia, and now cultivated in this and other northern countries. Its flesh is very tender, soft, and of a buttery quality.

VE"GETO-AN'IMAL MATTER, a term formerly applied to vegetable gluten, which is found in the seeds of certain plants, in a state of union with farina or starch. It is remarkably elastic, and when dry, semi-transparent. By distillation it affords, like animal substances, alkaline water, concrete volatile alkali, and an empyreumatic oil.

VEIN, in anatomy, a vessel which receives the blood brought by the arteries, and carries it back to the heart. Veins are continuations of the extreme capillary parts of the arteries, reflected back again toward the heart. Uniting their channels, as they approach the heart, all the veins ultimately form three trunks: the *vena cava descendens*, which brings the blood from all the parts above the heart; the *vena cava ascendens*, which brings the blood from all the parts below the heart; and the *porta*, which carries the blood to the liver.——In botany, the *veins* of plants are an assemblage of tubes, through which the sap is transmitted along the leaves. The term is more properly applied to the finer and more complex ramifications, which interbranch with each other like net-work; the larger and more direct assemblages of vessels being called *ribs* and *nerves*.——*Vein*, among miners, a space containing ores, spar, clay, &c.; when it bears ore, it is called a *quick vein*, when no ore, a *dead vein*. Metalliferous veins have been traced in the earth for miles; and many species of stones are also often found in *veins*.

VELITES, in antiquity, light armed troops in the Roman armies, who derived their name, *a velocitate*, from their swiftness. They seem not to have been divided into distinct bodies or companies, but to have hovered loosely in front of the army. They were disposed sometimes before the front of the *hastati*, sometimes dispersed up and down among the void spaces, and sometimes placed in two bodies in the wings. The *Velites* generally began the combat, skirmishing in flying parties with the first troops of the enemy, and, when repulsed, fell back by the flanks of the army, or rallied again in the rear. Their armour was a javelin, casque, cuirass, and shield, all of a light construction.

VEL'LUM, a fine kind of parchment made of calves' skin, rendered particularly clear and white. The invention of vellum has been usually, though erroneously, ascribed to Attalus, king of Pergamus, now Bergamo; but the art of writing upon skins was known long before the time of Attalus, and is assignable to Eumenes, king of Pergamus, the contemporary with Ptolemy Philadelphus, whose motive for giving his attention to the improvement of vellum is said to be as follows:—The Egyptian monarch was anxiously employed in perfecting his magnificent library at Alexandria: with these feelings and views, he prohibited the exportation of the papyrus from his dominions, that he might not be subjected to the inconvenience of wanting paper for the multitude of scribes, whom he constantly employed to copy the MSS. which he had, by means of skilful emissaries, collected in every part of the known world.

VELO"CIPEDE, a vehicle consisting of a piece of wood about five feet long, and half a foot wide, resting on two wheels, one behind the other. On this an individual sits, as on horseback, so that his feet touch the ground, while he propels the machine by pressing his feet slightly against the ground, and keeps his balance in the same way. The latter is the principal difficulty of beginners. In front of the saddle is a rest for the arms; and the front wheel may be turned at pleasure, so as to enable the rider to give any direction to the machine.

VELO"CITY, an extraordinary degree of swiftness. We apply the words *celerity* and *rapidity* to the swiftness of animals, but in speaking of the progress of bodies moving in ethereal space we use the word *velocity*; as, the velocity of a planet in its orbit, the velocity of a cannon-ball, the velocity of wind, or the velocity of light. Velocity is *absolute* or *relative*; absolute when a body moves over a certain space in a certain time; relative when it has respect to another moving body.

VE'NA CA'VA, in anatomy, the largest vein in the body, so called from its great cavity, into which, as a common channel, all the lesser veins, except the pulmonaries, empty themselves. This vein receives the blood from the liver and other parts, and carries it to the heart.

VE'NA PORTA, in anatomy, the great vein situated at the entrance of the liver, which is distinguished into two portions, the hepatic and abdominal.

VENEER'ING, the art of inlaying furniture, &c. with different kinds of wood, metal, or other materials. Also, of making representations of flowers, birds, and other figures.

VEN'TIDUCT, in building, a passage for wind or air; a subterraneous passage or spiracle for ventilating apartments.

VENTIL'ATION, the act of expelling impure air, and of dissipating noxious vapours. Few persons are aware how very necessary a thorough ventilation is to the preservation of health. We preserve life without food for a considerable time; but keep us without air for a very few minutes, and we cease to exist. It is not, however, enough that we have air; we must have *fresh* air; for the principle by which life is supported is taken from the air during the act of breathing. One-fourth only of the atmosphere is capable of supporting life; the remainder serves to dilute the pure vital air, and render it more fit to be respired. By the care we take to shut out the external air

THERE IS GREAT DANGER IN BURNING CHARCOAL IN ILL-VENTILATED ROOMS, BECAUSE IT PRODUCES CARBONIC OXYDE.

IT MAY BE TAKEN AS A WHOLESOME GENERAL RULE, THAT WHATEVER IS OFFENSIVE TO THE SMELL IS UNFAVOURABLE TO HEALTH.

from our houses, we prevent the escape of the deteriorated air, and condemn ourselves to breathe, again and again, the same contaminated, unrefreshing atmosphere. Who, that has ever felt the refreshing effects of the morning air, can wonder at the lassitude and disease that follow the continued breathing of the pestiferous atmosphere of crowded or ill-ventilated apartments! It is only necessary to observe the countenances of those who inhabit close rooms and houses, the squalid hue of their skins, their sunken eyes, and their languid movements, to be sensible of the bad effects of shutting out the external air. Chemistry, however, has furnished the means of purifying the air of chambers in which persons have been confined with contagious diseases, or in which bad air is generated in other ways, so as to destroy the noxious or offensive power of the effluvia generated in such situations, and thus of preventing its injurious influence. No fumigation will be of any avail in purifying stagnant air, or air that has been breathed till it has been deprived of its vital breath: such air must be driven out, when its place should be immediately supplied with fresh pure atmosphere. The readiest means of changing the air of an apartment is by lighting a fire in it, and then throwing open the doors and windows: this will set the air in motion, by establishing a current up the chimney.

VEN'TRICLES, in anatomy, a word applied to certain small cavities in the body; as, the two cavities of the heart which propel the blood into the arteries; cavities in different parts of the brain, &c.

VENTRIL'OQUISM, an art or practice of speaking, by means of which the voice appears to proceed from different places; though the utterer does not change his place, and in many instances does not appear to speak. It has been considered that the sounds were produced independent of the labial and lingual organs, and was supposed to be a natural peculiarity, because few persons have learned it by being taught; but it is certain that practice only is necessary to carry this act of illusion to a high degree of perfection, and that the sound is not produced during inspiration, but proceeds as usual, during expiration, with a less opened mouth. The art of the ventriloquist consists merely in this: after drawing a long breath, he breathes it out slowly and gradually, dextrously dividing the air, and diminishing the sound of the voice by the muscles of the larynx and the palate, moving the lips as little as possible.

VEN'UE, in law, the place where an action is laid. In certain cases the court has power to change the venue.

VE'NUS, in astronomy, a planet of brilliant splendour, known likewise by the names of the morning and evening star. She is the constant attendant on the sun, and is never seen in the eastern quarter of the heavens when that luminary is in the western quarter. Venus has been sometimes seen moving across the sun's disc in the form of a black spot: this is called the transit of Venus. The transit of Venus happened but twice during the last century, viz. in 1761 and 1769, and no other will occur till the year 1874. From the transit of Venus in 1761 was deduced the sun's parallax, and of course his distance from the earth was ascertained with very great accuracy. This distance was found to be somewhere between 95 and 96 millions of miles. This being obtained, the distances of the other planets were easily found by observation and calculation.

VERB, a genus of words, or part of speech, which expresses all actions of bodies and emotions of the mind, distinguishing their times and modes, sometimes by literal variations, and at others by auxiliary words.

VERBA'TIM ET LITERA'TIM [Lat.], word for word, and letter for letter.

VER'DICT, in law, the answer of a jury given to the court concerning any matter of fact in any cause, civil or criminal, committed to their trial and examination. [See JURY, &c.]

VER'DIGRIS, in chemistry, an impure acetate of copper, used as a pigment; it is the rust of brass gathered by laying plates of that metal in beds with the husks of pressed grapes, and then scraping it off the plates.

VER'DITER, a factitious substance or blue pigment, being a preparation of copper, and generally mixed with a yellow for a green colour. It is obtained by adding chalk or whiting to a solution of copper in nitric acid.

VERGE, in law, the compass or extent of the royal court, within which is bounded the jurisdiction of the lord steward of the royal household.

VER'GERS, certain officers of the courts of queen's bench and common-pleas who carry white wands before the judges. There are also *vergers* of cathedrals and collegiate churches, who carry a rod tipped with silver before the bishop, dean, &c.

VERGET'TE, in heraldry, a pallet or small pale; hence, a shield divided by such pallets, is termed vergette.

VERMEOL'OGY, a discourse or treatise on worms, or that part of natural history which treats of the class *vermes*.

VER'MES, in natural history, the last and lowest class in the Linnæan system. The animals in this class are not merely those commonly known by the name of worms, but also those which have the general character of being slow in motion, of a soft substance, extremely tenacious of life, capable of reproducing such parts of their body as may have been destroyed, and inhabiting moist places. There are five orders in this class, viz. *Infusoria; Intestina; Mollusca; Testacea;* and *Zoophyta*.

VERMIC'ULAR, resembling the tortuous motion of a worm; as the *vermicular* motion of the intestines, called also *peristaltic*.——In sculpture, *vermicular* or *vermiculated* work, a sort of ornament in Mosaic pavements, winding and representing the tracks of worms.

IN CROWDED AND ILL-VENTILATED SHIPS AND PRISONS, FEVERS OF THE WORST DESCRIPTION WERE FORMERLY OF FREQUENT OCCURRENCE.

VERMIFORMIS, in anatomy, a term applied to various parts in the human body, bearing some resemblance to worms; as, the *vermiform* process of the cerebellum. ——*Vermiformes musculi*, four muscles in each hand and foot, which bring the fingers and toes towards the thumbs and great toes, called also *lumbricales*.

VERMIFUGE, an anthelmintic medicine, or a substance that destroys or expels worms from animal bodies.

VERMILLION, a red pigment, of a hue between scarlet and crimson. There are two kinds of vermillion; the one natural or native, and the other artificial or factitious. Native vermillion is found in several silver-mines, in the form of a ruddy sand, which only requires to be purified. Factitious or common vermillion is made of the red sulphuret of mercury, or, as it was formerly called, factitious cinnabar, reduced to a very fine powder.

VERNAL, appearing in or appertaining to the spring; as, *vernal* flowers are preparatives to autumnal fruits.——*Vernal signs*, in astronomy, the signs in which the sun appears in the spring.——*Vernal equinox*, the equinox in March; opposed to the *autumnal* equinox, in September. [See EQUINOX.]

VERNATION, in botany, the disposition of the nascent leaves within the bud. It is also called *foliation*.

VERBENA, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. This genus of plants, well known in English by the name of *vervain*, consists of shrubs or annuals.

VERBESINA, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*. These consist entirely of shrubs.

VERONICA, in botany, a genus of plants, class 2 *Diandria*, order 1 *Monogynia*. The species are mostly perennials, consisting principally of the different kinds of the plant Speedwell.

VERSE, in poetry, a line or part of a composition, the cadences of which are similar in each. The harmony of every verse is complete in itself. Verses are made up of feet, the number and species of which constitute the character of the verse, as *hexameter*, *pentameter*, &c. In the Greek and Roman versification, a foot was determined by its quantity; in the English, quantity is supplied by accent.——*Blank-verse*, poetry in which the lines do not end in rhymes. ——*Heroic-verse* usually consists of ten syllables, or in English, of five accented syllables, constituting five feet.——*Versification* is the art of adjusting the syllables, and forming them into harmonious measure. [See POETRY.]

VERSATILE, an epithet for that quality which enables persons to turn readily from one thing to another.——In botany, a *versatile anther* is one fixed by the middle on the point of the filament, and so poised as to turn like the needle of a compass.

VERST, a Russian measure of length, containing 3500 feet; about three quarters of an English mile.

VERT, in law, everything in a forest that bears a green leaf which may serve as a cover for deer. To preserve *vert* and venison is the duty of the forest officer called the *verderer*.——In heraldry, the colour of green on coats of arms, represented in engraving by lines drawn from the dexter chief to the sinister base.

VERTEBRÆ, in anatomy, the twenty-four bones of which the spine consists, and on which the several motions of the trunk of our bodies are performed. The spine may be considered as being composed of two irregular pyramids, which are united to each other in that part of the loins where the last of the lumbar vertebræ is united to the *os sacrum*. The vertebræ which form the upper and longest pyramid, are called true vertebræ; and those which compose the lower pyramid, or the *os sacrum* and *coccyx*, are termed false vertebræ. In each of the vertebræ, as in other bones, we may remark the body of the bone, its processes and cavities. The body may be compared to part of a cylinder cut off transversely; convex before and concave behind, where it makes part of the cavity of the spine. There is in every vertebra, between its body and apophyses, a foramen, large enough to admit a finger. These foramina correspond with each other through all the vertebræ, and form a long bony conduit for the lodgment of the spinal marrow.——*Vertebrales*, a pair of muscles which serve to move the vertebræ of the back.——*Vertebral animals* are red-blooded, with brains and a spinal chord; other kinds, or invertebral, have white blood, no skull, and no back-bone.

VERTEX, in geometry, the top of any line or figure; as, the vertex of a triangle. ——In anatomy, the crown of the head. ——In astronomy, the zenith, or point of the heavens immediately over the head.

VERTICAL, pertaining to the vertex or zenith. The sun is vertical to the inhabitants within the tropics at certain times every year. A star is said to be vertical when it is in the zenith.——*Vertical circle*, in astronomy, a great circle of the sphere passing through the zenith and nadir, and cutting the horizon at right angles. *Vertical point*, is that point in the heavens which is over our heads, otherwise called the zenith.——*Vertical plane*, in perspective, is a plane perpendicular to the geometrical plane, passing through the eye, and cutting the perspective plane at right angles.—— *Vertical plane*, in conics, is a plane passing through the vertex of the cone, and parallel to any conic section.——*Vertical line*, in conics, is a right line drawn on the vertical plane, and passing through the vertex of the cone.——*Vertical dial*, is a sun-dial drawn on the plane of a vertical circle, or perpendicular to the horizon.——*Vertical leaves*, in botany, are such as stand so erect, that neither of the surfaces can be called the upper or under.——*Vertical anthers*, are such as terminate the filaments, and being inserted by their base, stand no less upright than the filaments themselves.

IN ADVANCED AGE, THE CARTILAGES BECOME SHRIVELLED, AND CONSEQUENTLY LOSE, IN A GREAT MEASURE, THEIR ELASTICITY.

VERTICELLA'TÆ, in botany, one of the Linnæan natural orders of plants, including those whose flowers grow in the form of a whorl, as the mint, &c.

VES'PA, in entomology, the Wasp, a genus of insects of the *hymenopterous* order, having the mouth horny, feelers four, unequal; antennæ filiform; body glabrous; upper wings folded; sting pungent, concealed in the abdomen.

VES'PERS, the evening songs or prayers in the Romish church.——*Sicilian Vespers*, in French history, a massacre of all the French in Sicily, in the year 1582. It is so called, because the ring of the bell for vespers was the signal.

VES'TA, in astronomy, one of the most recently discovered planets. It was discovered by Dr. Olbers, at Bremen, March 29, 1807.

VESTALS, in antiquity, certain virgins consecrated at Rome to the service of the goddess Vesta, and to whom was committed the care of the vestal fire, which was to be kept perpetually burning upon her altar. Their dress was a white vest, with a purple border; a white linen surplice, called *suparum linteum*; and over this a large purple mantle, with a long train. On their heads they wore the *infula*, and from the infula hung ribbons. When a vestal was convicted of unchastity, she was led to the Campus Sceleratus, and stripped of her habit solemnly by the pontiff. She was then put alive into a pit, with a lighted candle, a little water and milk, and thus covered up to pine and languish away the short remainder of her miserable existence.

VES'TIBULE, in architecture, a porch or entrance into a building.——In fortification, that space or covered ground which is in front of a guard-house.

VESTIB'ULUM, in anatomy, a round cavity of the internal ear, between the cochlea and semicircular canals.

VES'TRY, a place adjoining the church where the vestments of the minister are kept; also where the parishioners assemble for the discharge of parochial business; whence such a meeting is also called a vestry.——*Vestry-clerk*, an officer appointed to attend all vestries, and take account of their proceedings, &c.

VESU'VIAN, in mineralogy, a subspecies of pyramidical garnet, a mineral found in the vicinity of Vesuvius. It is generally crystalized in four-sided prisms, the edges of which are truncated, forming prisms of eight, fourteen, or sixteen sides. It is composed of silex and alumine, with a portion of the oxydes of iron and manganese.

VETCH, in botany, a plant of the leguminous kind, with papilionaceous flowers, of the genus *Vicia*. The name is also applied, with various epithets, to many other leguminous plants of different genera. The general habit of these plants is precisely similar to that of the pea. Upwards of eighty species are known, most of which inhabit the northern and temperate parts of the European continent. The common vetch, or tare, is extensively cultivated in Europe, and considered a valuable agricultural plant.

VET'ERINARY ART, OR SCIENCE, a modern term for what was formerly called farriery. It comprehends a knowledge of the external form, as well as the internal structure and economy of the horse (and quadrupeds generally); and embraces whatever relates to the diseases to which the horse is liable; with an accurate knowledge of the principles and practice of shoeing, of feeding, exercising, &c. of that noble and highly useful animal. To the veterinary practitioner, the study of the principles of his art, the history of the diseases which he is called on to relieve, and the methods of treating them that have been found most successful, are as essential as the study of medical science to the physician.

VE'TO, a prohibition, or the right of forbidding; applied to the right of a king or other magistrate or officer to withhold his assent to the enactment of a law, or the passing of a decree.——*Veto* was the important and solemn word which the tribunes of the Roman people made use of when they inhibited any decree of the senate, or law proposed to the people, or any act of other magistrates. The bare pronouncing of the word *veto* was sufficient to suspend the business, without any reasons assigned for their dissent.

VEX'IL (*vexillium*), a flag or standard.——In botany, the upper petal of a papilionaceous flower.

VI'ADUCT, a structure made for conveying a carriage way, either by raising mounds or arched supports across marshes, rivers, &c., as is the case with some of the railroads, or by perforation through hills, &c.

VI'A LACTE'A, in astronomy, the milky way, a shoal of countless stars in the heavens, to which same shoal the sun and most of the visible stars belong.

VIAT'ICUM, among the Romans, an allowance or provision made by the republic for such of its officers or magistrates as travelled upon the business of the state into any of the provinces. The term *viaticum* implies not only money for defraying the expenses of travelling, but their clothes, ornaments, baggage, &c.——*Viaticum*, in the church of Rome, an appellation given to the eucharist, when administered to persons at the point of death.

VIA'TOR, in Roman antiquity, an appellation given in common to all officers of any of the magistrates; as lictors, accensi, scribes, criers, &c.

VIBRA'TION, a regular reciprocal motion of a body, as a pendulum, which being freely suspended, swings or vibrates from side to side. The vibrations of the same pendulum are all in equal times, at least in the same latitude. The regular motion of the pendulum of a clock is 3600 vibrations in an hour.——*Vibration* is also used, in physics, for various other regular alternate motions: thus sensation is supposed to be performed by means of the vibratory motion of the nerves, begun by external objects, and propagated to the brain.——In music, the motion of a chord, or the undu-

lation of any body, by which sound is produced. The acuteness, elevation and gravity of sound, depend on the length of the chord and its tension.

VIC'AR, a particular kind of parish priest, where the predial tithes are impropriated or appropriated, that is, belong to a chapter or religious house, or to a layman, who receives them, and only allows the vicar the smaller tithes as a salary.——*Vicars apostolical*, in the Romish church, are those who perform the functions of the pope in churches or provinces committed to their direction.——The title of *vicar-general* was given by Henry VIII. to the earl of Essex, with power to oversee all the clergy, and regulate all church affairs. It is now the title of an office, which, as well as that of official principal, is united in the chancellor of the diocese. The business of the vicar-general is to exercise jurisdiction over matters purely spiritual.

VICE (Lat. *vice*, in the turn or place), is used in composition to denote one *qui vicem gerit*, who acts in the place of another, or is second in authority. Thus we have such words as *vice-chamberlain, vice-chancellor, vice-resident, vicegerent, viceroy*, &c.——*Vice*, in smithery, an instrument used for holding fast any piece of iron which the artificer is working upon.——Among glaziers, a machine for drawing lead into flat rods for case windows.

VI ET AR'MIS, in law, words made use of in indictments and actions of trespass, to show the violent commission of any trespass or crime.

VI"GIL, in church affairs, the evening before any feast, the ecclesiastical day beginning at six o'clock in the evening, and continuing till the same hour the following evening. The word is derived from the *vigiliæ*, which denoted the night watches and guards among the Roman soldiers, in contradistinction to the *excubia*, who kept guard by day. The word was hence adopted by the first Christians who spent a part of the night preceding the solemn festivals in prayer, to prepare themselves for the coming celebration.

VIL'LEIN, a name given, in ancient times, to persons not proprietors of land, many of whom were attached to the land, and bound to serve the lord of the manor. [See FEUDAL SYSTEM.]

VIL'LUS, in botany, a term applied by Linnæus to the soft close hairs on different parts of plants, which form a fine nap or pile like velvet.

VINA'LIA, in antiquity, a festival observed by the Romans Aug. 19, in honour of Jupiter and Venus.

VINE, in botany, a plant of the genus *Vitis*, that produces grapes, common in most warm and temperate countries, and of which there are an immense number of varieties. In Italy, Spain, and France, the vineyards cover large tracts, and the manufacture of wine is an important branch of industry. The trees are cut down and exhibit the appearance of gooseberry bushes, those grapes ripening the best that are nearest the ground. That wine is the strongest, and has most flavour, in which both the skins and stones are bruised and fermented. As a general rule, the varieties most esteemed for wine-making have small berries and bunches, with an austere taste. In certain localities, the vine lives only twenty or thirty years; but under favourable circumstances it may last several hundred. There can be little doubt that the cultivation of the vine was introduced into this country by the Romans. Vineyards are mentioned in "Domesday Book;" and it is known that the abbeys and religious houses usually possessed a vineyard. The inmates of these institutions were many of them foreigners, and they contributed to render the cultivation of the vine tolerably successful. The names of several places in Kent are supposed to be derived from their having been the site of vineyards. In the reign of Henry II., the cultivation of the vine in England began to be neglected. Our intimate connection with France—our actual possession, indeed, of a portion of the wine-growing districts of that country—contributed to produce this circumstance. But though the making of wine was no longer carried on in so extensive a manner, yet there is sufficient testimony that during the 16th and 17th centuries, a considerable quantity of wine was made in England from the produce of the grape. [For further observations on this subject, see the article "GRAPE."]—The word *vine* also denotes the long slender stem of any plant that trails on the ground, or climbs and supports itself by winding round a fixed object, or by seizing any fixed thing with its tendrils or claspers.

VIN'EGAR, or ACE'TIC ACID, an acid liquor obtained from wine, cider, beer, or other liquors, by the acetous fermentation. The varieties of acetic acids known in commerce are five: 1. wine vinegar; 2. malt vinegar; 3. cider vinegar; 4. sugar vinegar; 5. wood vinegar. In Great Britain vinegar is usually made of malt; though a very considerable quantity, made for family use, is made from cider and British wines.

VI'NERY, in gardening, an erection for supporting vines and exposing them to artificial heat, consisting of a wall with stoves and flues.

VINIFACTEUR [Fr.], a method made use of in France and Spain to improve the spirituous fermentation of wine. During the fermentation, a portion of the etherial parts of the wine escapes from the open vats; and the *vinifacteur* is intended to collect these parts, and to convey them back to the *must*. It is a cap, put on the vat, and surrounded by cold water in a vessel, in order to condense these vapours. The cap is provided with a tube to admit of the escape of the gaseous parts which do not condense.

VI'NOUS FERMENTA'TION, that important process by which wine, beer, cider, &c. are made, and from which, by distillation, result all spirits. It is effected by well combining saccharine matter with water,

VINEGAR IS BOILED FOR PICKLING, THAT THE IMPURITIES, COAGULATED BY HEAT, MAY BE SEPARATED BY STRAINING, WHEN COOL.

GRAPES FOR MAKING WINE SHOULD BE WELL PRESSED, THEIR ACID AS WELL AS THEIR SWEET JUICES BEING NECESSARY.

the hydrogen of which combines with the acid of the sugar, and its own oxygen escapes as carbonic acid gas, leaving a solution variously hydrogenous, which bottled, or bunged up in casks, forms useful liquors; or acted upon by heat, the hydrogenous parts rise first, and constitute spirits. But if this fermentation exhausts itself, a reaction takes place, oxygen is absorbed from the air, and the compound becomes vinegar. A further action is the exhalation of the gases, and the subsidence of the carbon by which the original substance is entirely decomposed. The three stages of vinous, acetous, and putrescent fermentation, are the actions and re-actions by which a natural compound of the gases are returned to the atmospheric mass. The first is the escape of oxygen, the second is its absorption, and the last is the dispersion of all the gaseous constituents.

VI'OL, a stringed musical instrument, of the same form as the violin, but larger. Viols are of different kinds; the largest is called the *bass viol*, whose tones are deep, soft, and agreeable.

VI'OLA, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. Plants of this genus are perennials, well known by the English name of Violet.

VIOLET, in botany, a plant and flower of the genus *Viola*, of many species. These are favourite flowers in all northern and temperate climates, and many of them are among the first to make their appearance in the spring. The corolla is composed of five unequal petals, of which the inferior one is the largest, and is more or less prolonged into a spur at the base. The roots are mostly perennial; the stem almost wanting in some species, and distinct in others; the leaves are alternate, provided with stipules at the base, and the flowers are disposed on axillary peduncles.

VIOLIN', the most perfect of all stringed musical instruments played with the bow. The violin consists of three chief parts—the neck, the table, and the sound-board. The violin has four catgut strings of different sizes, of which the largest is wound round with wire. Music for the violin is always set in the G key, which on that account is called the *violin key;* and the excellence of the instrument consists in its purity and distinctness, strength, and fulness of tone.

VIOLONCEL'LO, a musical instrument which comes between the *viola di braccio* (or arm viol) and the double bass, both as to size and tone. It is constructed entirely on the same plan with the violin; and the player holds it between his knees. Its notes are written in the F or bass clef; and it generally accompanies the double bass.

VIOLO'NO, the English *double bass*, a deep-toned musical instrument, the largest of the kind played with a bow, and principally used to sustain the harmony.

VI'PER, an animal of the snake tribe, the bite of which is more or less venomous in all countries, but in tropical regions it is almost instantly fatal.

VIR'GA, in archæology, the rod or staff which sheriffs, bailiffs, &c. carry as a badge of their office.——*Virga ulnaria*, a yard measure according to the legal ell, or true standard.

VIR'GINAL, in music, a stringed and keyed instrument resembling the spinnet. It is now quite obsolete, though formerly in great repute.

VIR'GO, in astronomy, the sixth sign of the zodiac; and a constellation containing according to the British catalogue, 110 stars.

VI'RUS, in medicine, a watery fetid matter issuing from wounds, which is endued with corrosive and malignant qualities.

VIR'TU, a love of the fine arts, and a taste for curiosities.

VIRTUO'SO, one skilled in antique or natural curiosities; a lover of the liberal arts.

VIS'CERA, in anatomy, the intestines, or contents of the abdomen and thorax.

VISCOUNT (pron. *vi'count*), a nobleman next in degree to an earl. The first viscount was created in the reign of Henry VI.——A *viscount's coronet* has neither flowers nor points raised above the circle, like those of superior degree, but only pearls placed on *Siva*, the circle itself.

VIS'CUS, in medical science, any organ or part which has an appropriate use, as the viscera of the abdomen, &c.

VISH'NU, the second person of the Hindoo *trimourti* or trinity, consisting of *Brama*, the creator, *Vishnu*, the preserver, and the destroyer.

VIS INERTIÆ, the power in bodies that are in a state of rest to resist any change that is endeavoured to be made upon them to change their state. This, according to Newton, is implanted in all matter.——*Vis insita*, that power by which a muscle, when wounded, touched, or irritated, contracts, independent of the will of the animal that is the object of the experiment, and without its feeling pain.——*Vis medicatrix naturæ*, a term employed by physicians to express that healing power in an animated body, by which, when diseased, the body is enabled to regain its healthy actions.——*Vis mortua*, that property by which a muscle, after the death of the animal, or a muscle, immediately after having been cut from a living body, contracts.——*Vis nervosa*, a power of the muscles by which they act when excited by the nerves.——*Vis plastica*, that facility of formation which spontaneously operates in animals.——*Vis vitæ*, the natural power of the animal machine in preserving life.

VI''SION, in physiology, the act of perceiving objects by means of the organ of sight. Modern philosophers agree in supposing vision to be produced by rays of light, reflected from the several points of objects, received in at the pupil, refracted and collected in their passage through the coats and humours to the retina, or the choroides, and thus striking, or making an impression on so many points of one of those membranes; which impression is conveyed to the optic nerve, and thence to the brain.

THE POISON OF SERPENTS IS SECRETED ABOVE THE UPPER JAW, AND CONVEYED TO A TOOTH WHICH THEY CAN ERECT OR DEPRESS AT WILL.

[See EYE, OPTICS, &c.] In Scripture, *visions* signify revelations from God; an appearance of something supernaturally presented to the minds of the prophets, by which they were informed of future events; as, the visions of Isaiah, Ezekiel, &c.—With regard to those mental and optical illusions which have given rise to stories of ghosts and apparitions, they are all either produced by a disordered state of the mind, or occasioned by the presence of some external object, under such circumstances as to deceive the senses. Dr. Abercrombie, in his "Inquiries concerning the Intellectual Power," treating of spectral illusions, refers them to the following heads:—1. False perceptions or impressions made upon the senses only, in which the mind does not participate. 2. Real dreams, though the person was not at the time sensible of having slept, nor, consequently, of having dreamt. A person, as he observes, under the influence of some strong mental impression, drops asleep for a few seconds, perhaps, without being sensible of it; some scene or person connected with the impression appears in the dream, and he starts up under the conviction that it was a spectral appearance. 3. Intense mental conceptions, so strongly impressed on the mind as, for the moment, to be believed to have a real existence. This takes place, when, along with the mental emotion, the individual is placed in circumstances in which external impressions are very slight, as solitude, faint light, and quiescence of body. It is a state bordering closely upon dreaming, though the vision occurs while the person is in the waking state. 4. Erroneous impressions connected with bodily disease, generally disease in the brain. The illusions in these cases arise in a manner strictly analogous to dreaming, and consist of some former circumstances recalled to the mind, and believed for a time to have a real and present existence. The diseases in connexion with which they arise, are generally of an apoplectic or inflammatory character, sometimes epileptic; and they are very frequent in the affection called *delirium tremens*, produced by a continued use of intoxicating liquors.

VISITATION, in ecclesiastical polity, an office or act of superintendence performed by a bishop once in three years, by visiting the churches and their rectors, &c. throughout the whole diocese. Parochial visitation by the archdeacons is annual.

VISITOR, in law, an inspector into the government of a corporation.

VISUAL. In perspective, the *visual point*, is a point in the horizontal line, in which all the ocular rays unite.——*Visual rays*, lines of light, imagined to come from the object to the eye.

VITAL FUNCTIONS, those functions or faculties of the body on which life immediately depends; as the circulation of the blood, respiration, the heat of the body, &c.

VITIS, in botany, a genus of plants, class 5 *Pentandria*, order 1 *Monogynia*. The principal species are the *Vitis vinifera*, the common vine, and the *Vitis Indica*, the Indian vine.

VITREOUS HUMOUR, the pellucid body which fills the whole bulb of the eye behind the crystaline lens.

VITRIFACTION, the act, process, or operation of converting into glass by heat; as, the *vitrifaction* of sand, flint, and pebbles, with alkaline salts.

VITRIOL. [See COPPERAS, SULPHUR, &c.]

VITRIOLATED, in chemistry, converted into sulphuric acid or vitriol.

VITRIOLIC ACID. [See SULPHURIC ACID.]

VIVACE, in music, an Italian epithet, signifying lively; and *vivacissimo*, very lively.

VIVARY, a place for keeping living animals, as a park, a warren, a pond, &c.

VIVA VOCE [Lat.], by word of mouth; as, to vote, or to communicate with another person, *viva voce*.

VIVES, in the veterinary art, a disease of horses and some other animals, seated in the glands, under the ears, where a tumour is formed which sometimes ends in suppuration.

VIVIFICATION, in chemistry, the act of giving new lustre, force and vigour; as, the *vivification* of mercury.

VIVIPAROUS, in natural history, an epithet for producing young in a living state; as distinguished from *oviparous*, producing eggs, as birds.——In botany, a *viviparous plant* is one in which either the seeds germinate on the plant, instead of falling, as they usually do, or which produces its living offspring as bulbs.

VIZIER, or GRAND VIZIER, the title of the chief minister of the Turkish empire. He is the representative of the sultan, conducts the deliberations of the divan, and decides alone; for by a seal which he receives at the time of his appointment, he is authorized to rule with absolute power, in the name of the sultan. The title of *vizier* is also given to all the pachas of three tails, or pachas of the highest rank.

VOCAL MUSIC, music produced by the voice, either unaccompanied or accompanied by instruments. Vocal music has many advantages over instrumental, in its endless variety of intonation and expression, and in the support which it derives from its connexion with words. [See MUSIC.]

VOICE, the sounds produced by the organs of respiration, especially the larynx. The lungs, the wind-pipe, &c., the finely-arched roof of the mouth, and the pliability of the lips, are each of the greatest importance in producing the different intonations which render the human voice so agreeable and harmonious. A good musical voice depends chiefly upon the soundness and power of the organs of utterance and of hearing; and is much promoted by the practice of singing and gymnastic exercises that expand the chest.

VOLANT, in heraldry, an epithet for flying or having the wings spread.

VOLATILE, in chemistry, an epithet for substances which waste or easily pass away

SULPHURIC ACID WAS FORMERLY CALLED OIL OF VITRIOL, FROM BEING OBTAINED BY THE DISTILLATION OF GREEN VITRIOL.

into the aeriform state: as, musk, hartshorn, and the various essential oils. Alcohol and ether are called *volatile* liquids for a similar reason, and because they easily pass into the state of vapour on the application of heat.

VOLCA'NOES, in geology, burning mountains, or explosions in the earth, forming mountains with their melted materials. Beneath the outer crust of the earth inflammable materials appear to exist, which access of water, air, or pressure, excite into combustion. They are supposed to consist of the inflammable bases of metals, which ignite by access of water, and then expanding into steam they shake the granitic foundations, and sometimes bursting through, produce all the destructive effects of earthquakes and volcanoes. They break forth under the sea, as well as the dry land, and throw up mountains which rise above the level of the water, causing tremblings of the coasts. The extent of the action is often 5 or 600 miles, and their effects on sea and land frightful and destructive. According to the opinions of the best informed philosophers, they depend upon the oxydation of the metals of the earths upon an extensive scale, in immense subterranean cavities, to which water or atmospheric air may occasionally have access. The subterranean thunder heard at great distances under Vesuvius, prior to an eruption, indicates the vast extent of these cavities; and the existence of a subterranean communication between the Solfatara and Vesuvius, is established by the fact that whenever the latter is in an active state, the former is comparatively tranquil. Almost all the volcanoes of considerable magnitude in the old world, are in the vicinity of the sea; and in those where the sea is more distant, as in the volcanoes of South America, the water may be supplied from great subterranean lakes; for Humboldt states that some of them throw up quantities of fish. The phenomena observed by Sir Humphry Davy afford a sufficient refutation of all the ancient hypotheses, in which volcanic fires were ascribed to such chemical causes as the combustion of mineral coal, or the action of sulphur upon iron; and are perfectly consistent. The author acknowledges, however, that the hypothesis of the nucleus of the globe being composed of matter liquified by heat, offers a still more simple solution of the phenomena of volcanic fires. On these phenomena, baron Humboldt says, "Observations made in all countries, in mines and caves, prove that, even at a small depth, the earth's heat is much superior to the temperature of the surrounding atmosphere. A fact so remarkable, and elicited from observations made in almost every part of the globe, connects itself with what we learn of the phenomena of volcanoes. La Place has even attempted to determine the depth at which the earth may be considered as a melted mass. Whatever doubts may be entertained, notwithstanding the respect due to so great a name, as to the numerical accuracy of such a calculation, it is not the less probable, that all volcanic phenomena arise from a single cause, which is the communication, constant or interrupted, that exists between the interior of our planet and the external atmosphere. Elastic vapours, by their pressure, raise through deep crevices the substances which are in a state of fusion, and which are oxydized. Volcanoes are, so to speak, intermittent springs of earthy matters. The fluid mixture of metals, alkalies and earths, which condense into currents of lava, flow gently and slowly, when, on being raised up, they once find an issue." There are certain regions to which volcanic eruptions, and the movements of great earthquakes, are confined: over the whole of vast tracts active volcanic vents are distributed at intervals, and most commonly arranged in a linear direction. Throughout the intermediate spaces there is abundant evidence that the subterranean fire is continually at work; for the ground is convulsed, from time to time, by earthquakes; gaseous vapours, especially carbonic acid gas, are disengaged plentifully from the soil; springs often issue at a very high temperature, and their waters are very commonly impregnated with the same mineral matters, which are discharged by volcanoes during eruptions. Of these great regions, that of the Andes is one of the best defined. Commencing southward, at least at Chili, at the forty-sixth degree of south latitude, it proceeds northward to the twenty-seventh degree, forming an uninterrupted line of volcanoes. The Chilian volcanoes rise up through granitic mountains. Villarica, one of the principal, continues burning without intermission, and is so high that it may be distinguished at the distance of 150 miles. A year never passes in this province without some slight shock of earthquakes; and about once in a century, or oftener, tremendous convulsions occur, by which the land has been shaken from one extremity to the other, and continuous tracts, together with the bed of the Pacific, have been raised permanently from one to twenty feet above their former level. Hot springs are numerous in this district, and mineral waters of various kinds. Pursuing our course northward, we find in Peru only one active volcano as yet known; but the province is so subject to earthquakes, that scarcely a week passes without a shock; and many of these have been so violent as to create great changes in the surface. Farther north, we find, in the middle of Quito, where the Andes attain their greatest elevation, Tunguragua, Cotopaxi, Antisana, and Pichincha, the three former of which not unfrequently emit flames. From the first of these, a deluge of mud descended in 1797, and filled valleys, 1000 feet wide, to the depth of 100 feet, forming barriers, whereby rivers were dammed up, and lakes occasioned. In the year 1812, violent earthquakes convulsed the valley of the Mississippi at New Madrid, for the space of three hundred miles in length. As this happened exactly at the same time as the great earth-

IN 1631, SEVEN STREAMS OF LAVA POURED AT ONCE FROM THE CRATER OF VESUVIUS, AND OVERFLOWED SEVERAL VILLAGES.

SINCE THE YEAR 1666 THERE HAS BEEN A CONSTANT SERIES OF ERUPTIONS FROM VESUVIUS, WITH RARELY AN INTERVAL OF TEN YEARS' REST.

quake of Caraccas, it is probable that these two points are parts of one continuous volcanic region: for the whole circumference of the intervening Caribbean sea must be considered as a theatre of earthquakes and volcanoes. On the north lies the island of Jamaica, which, with a tract of the contiguous sea, has often experienced tremendous shocks, and these are frequent, extending from Jamaica to St. Domingo and Porto Rico. On the south of the same basin, the shores and mountains of Columbia are perpetually convulsed. On the west is the volcanic chain of Guatimala and Mexico, and on the East, the West Indian isles, where in St. Vincent's and Guadaloupe, are active vents. Thus it will be seen that volcanoes and earthquakes occur, uninterruptedly, from Chili to the north of Mexico; and it seems probable, that they will hereafter be found to extend, at least, from Cape Horn to California. In another direction, the volcanic range is prolonged through Borneo, Celebes, Banda, New Guinea, and various parts of the Polynesian archipelago. The Pacific ocean, indeed, seems, in equatorial latitudes, to be one vast theatre of igneous action, and its innumerable archipelagoes, such as the New Hebrides, Friendly islands, and Georgian islands, are all composed either of coralline limestones or volcanic rocks, with active veins here and there interspersed. In the old world, the volcanic region extends from east to west for the distance of about 1000 miles, from the Caspian sea to the Azores, including within its limits the greater part of the Mediterranean and its most prominent peninsulas. From south to north, it reaches from about the thirty-fifth to the forty-fifth degree of latitude. Its northern boundaries are Caucasus, the Black sea, the mountains of Thrace, Transylvania, and Hungary,—the Austrian, Tyrolean, and Swiss Alps,—the Cevennes and Pyrenees, and the mountains which branch off from the Pyrenees westward, to the north side of the Tagus. Respecting the volcanic system of Southern Europe, it may be observed, that there is a central half, where the greatest earthquakes prevail, in which rocks are shattered and cities laid in ruins. On each side of this line of greatest commotion, there are parallel bands of country where the shocks are less violent. At a still greater, as in Northern Italy, there are spaces where the shocks are much rarer and more feeble. Beyond these limits, again, all countries are liable to slight tremors at distant intervals of time, when some great crisis of subterraneau movement agitates an adjoining volcanic region; but these may be considered as mere vibrations, propagated mechanically through the external crust of the globe, as sounds travel almost to indefinite distances through the air. During the last century, about fifty eruptions are recorded of the five European volcanoes, Vesuvius, Ætna, Volcano, Santorin, and Iceland; but many beneath the sea, in the Grecian archipelago, and near Iceland, may have passed unnoticed. If some of them produced no lava, others on the contrary poured out torrents of melted matter for months together: so that however inconsiderable may be the superficial rocks, which the operations of fire produce on the surface, when it is computed that on the whole globe 2000 volcanic eruptions occur in the course of a century, we must suppose the subterranean changes now constantly in progress to be on the grandest scale.

VOLTA'IC ENGRA'VING, or the ELEC'TROTYPE. As it appears desirable that we should endeavour to bring this subject as prominently forward as possible,—since it is a continuation, though different in its principles, of the discovery of the DAGUERREOTYPE or PHOTOGENIC DRAWING, which, under their respective heads, we have inserted,—we have availed ourselves of a very considerable portion of an able article on the subject, as it appeared in the Westminster Review, for September, 1840. The chief objects of Voltaic Engraving are:—to raise upon an unengraved plate of copper a design in relief; to copy with perfect accuracy engraved plates, medals, ornaments, &c., either in relief or the reverse; and to obtain any number of copies. The accomplishment of these objects depends on the application of an entirely new idea in science. This new idea will be best brought out if we place it side by side with the nearest old one that we know, and that is, the idea of casting, by pouring into a mould, metal or any other substance in the liquid form, and then leaving it to harden and solidify. It will easily be seen that the melting process is a reducing of the rigid coherence of the parts of the metal, so that it can be easily separated into an indefinite number of small portions, every one of which is at liberty to go in any direction, without control from the mass. Instead of a rigid individual solid, we have a *liquid*, whose property it is to be resolvable by the slightest force into a multitude of small masses. In this state of subdivision it can be put into any form we please: we may cut out ever so many fantastic shapes,—it is capable of conforming to them all. On the same principle that we can stop up small crevices by paste, or anything admitting of minute subdivision, we can fill up all the corners and crevices of a mould by liquid metal. Liquefying serves the same purpose as founding, while, at the same time, it does not entirely destroy the hold that the particles have of each other; it allows them great latitude and freedom, and still keeps them under a slight bond, which, by the cooling process is again gradually drawn tighter, till they cling to each other with their original intensity. Now the comparison of this process with our new idea will be best effected by singling out two of its chief defects. The first is the great heat necessary, in order to give to the metal the required looseness and pliancy. On account of this, the mould and other utensils employed must be fit to endure a very high tempe-

IN THE YEAR 1630 A TORRENT OF BOILING WATER, MIXED WITH LAVA, DESTROYED PORTICI AND TORRE DEL GRECO.

rature, a condition not always easily fulfilled. The second defect is, that the subdivision of the metal is not so minute as we could wish, for many purposes. Liquids have a considerable amount of cohesion, which leads them to form into pretty large drops, that cannot be separated into smaller, or reduced without great force. On this account there may be openings or hollows in the mould, that the melted metal will not enter. If these are very minute, a small portion of the fluid will lie over their mouths, as it were, and the cohesion will be too strong to allow any particles to fall away from these overhanging drops, and fill up such openings. Were there no cohesion at all, every crevice or cavity would be filled up that was large enough to admit an atom; but so great is the amount of cohesion in liquids, that openings are left unentered that are probably large enough to admit a mass of a thousand, or, for anything we know, a million of atoms. Thus it is that, on the liquefying system, the casting must be a great way from being the exact counterpart of the mould. If we would procure very fine resemblances, we must seek another system. Now these two defects are got rid of by Mr. Spencer's discovery, for in his system of casting, a high heat is not required, and hence the mould may be an inflammable substance, if we please: and in the second place, the subdivision is carried, we verily believe, to the ultimate atoms of the substance used. The metal is deposited on the mould, not in cohering drops, which may refuse to enter many of the fine lines or crevices, but in solitary atoms, which must enter every opening of an atom's breadth. There is as much difference between liquid metal and the metal laid down by this process, as between common clay and the dust that is carried by the wind. This will appear as we proceed to explain the process in detail. The most common kind of voltaic circle is composed of two metals and a corrosive liquid, such as an acid or a saline solution. One of the metals must be more oxydizable than the other; that is, its particles must go more easily and more quickly into combination with the oxygen of the liquid; and the greater the difference in this respect, the more powerful will be the circle. The metals mostly employed are zinc and copper, zinc being the more oxydizable. A plate of each is put into a vessel containing the acid or saline solution (they are not thrown in at random, but supported in an upright position, like the two walls of a house): if there be no metallic connection between them, both are attacked by the liquid, the zinc being turned into oxyde with the greatest rapidity. But if a copper wire be fastened to each, and the two wires brought together (out of the liquid generally), a voltaic circle is formed, and the appearances are now somewhat different. The action of the liquid on the copper, which was the least action of the two, now ceases entirely; the action upon the zinc becomes much more violent, or, in other words, the particles of oxygen are now much more disposed than before to leave the liquid, and combine with the particles of zinc; the affinity has been strengthened, and the union is very much quickened. A current of electricity is now found to go round the circuit, the positive electricity commencing, as it were, at the zinc, where the violent combination is going on, proceeding from that through the acid to the copper, thence along the wire round to the zinc again. A negative current, if such there be, must move in the contrary direction; but the direction of the positive current is easily remembered by imagining, as we have done, that it takes its origin at the place of strong action, viz. at the zinc, and goes from that through the acid to the copper, and round by the wire to the place where it set out. We must now proceed to explain Mr. Spencer's application of the voltaic circle to the making and copying of engravings, &c. If a single circle be constructed of copper, acid, and zinc, and if the acid part of the conductor be interrupted by placing between it and the copper another liquid, such as the solution of a metallic salt, sulphate of copper we shall say, the currents will circulate as before, only with some diminution of intensity, and the sulphate of copper thus interpolated will be gradually decomposed; the copper of the solution going towards the copper plate, and the sulphuric acid in the opposite direction, or towards the zinc, forming at the same time the sulphate of zinc, which in practice, however, it is not allowed to reach. Now the thing to be noted here is, that the copper parts with the sulphuric acid, apparently in single atoms, and in this state it proceeds towards the plate. It forms, as it were, a shower of ultimate particles, which descend one by one, and do not go together till they reach their destination, or settle on the plate. That this last assertion (that the particles remain separate till they fall on the copper plate) is not mere conjecture, we gather from the fact, which Mr. Spencer tells us he has completely established, that the metallic particles will not crystalize, in other words, will not go together, *except on a metallic nucleus*. As long, therefore, as they float in the liquid, they are in a state of complete separation: it is not likely that any two of them will cohere, for if two went together, these might attract a third and a fourth, and there would soon be a nucleus formed that would congregate the whole, a thing never known to happen. Unless some metallic body is present to which the particles may attach, and on which they may form and arrange themselves in their cohering attitudes, they cannot go together; but as soon as such a nucleus is presented, they begin and deposit themselves in such a way as to build up a solid metallic mass. If we suppose now that the copper plate of the circle is a mould from which we would wish to take a casting, we can easily see the superiority of metal, in the state just mentioned, over liquid metal, for this pur-

pose. It is completely broken up, as far as we can see, into individual atoms; and no scratch upon a mould can be conceived so fine that these, slowly approaching, one by one, cannot enter. The slightest imperfection in polish on the plate will be rigorously copied in reverse by the deposit; every depression of an atom's breadth in the former will be answered by a corresponding elevation on the latter. The mind cannot conceive anything surpassing this in the art of metal founding. The next step could only be the founding of the atoms.——*Method of engraving in relief on a plate of copper.* This is effected by taking the plate on which we are to engrave, and soldering a piece of wire to the back of it, so as to adapt it to the circle. It is then covered with a coating of wax, somewhat less than one-eighth of an inch in thickness. Upon the surface of this coating we have to write or draw with a black lead pencil or steel point the design that we wish to engrave, or rather *raise* upon the plate. We then take a graver and cut the wax through to the copper, along all the lines that were marked with the pencil, being careful that the copper shall be completely exposed in every part of every line. We have now the design cut or engraved in the wax coating. The end of the graver should be of the form of a thin parallelogram, so as to make the lines or grooves in the wax equally broad at the bottom and the top. In order that the wax may be thoroughly cleaned out of the lines of exposed copper, the plate must next be immersed in dilute nitric acid (about three parts of water to one of acid), and allowed to remain till a very slight corrosion of the exposed parts takes place. The particles of wax that the graver has not removed are driven off by the fumes of the acid so as to do no further harm. The plate is now to be put in its place in the sulphate of copper solution, in the outer trough of the apparatus, a plate of zinc of equal size placed in the inner vessel, and the circle completed. The decomposition of the sulphate of copper begins, and the particles of copper, going in the direction of the positive current, resort to the coated plate. As they require a metallic nucleus before they can cohere or crystalize, they cannot deposit themselves on the wax, and therefore they only fall into the lines where the wax is cut through, and the copper exposed. By filling up these cavities in the wax, ridges or projections of copper are gradually built up on the plate. When these are on a level with the coating, the process is stopped, and the plate taken out; care being taken, should the deposit not be sufficient, not to allow the surface of the plate to become dry, otherwise a fresh deposit will take place when returned to the solution, which new deposit will mar the operation entirely, as the new surface when printed on will be found to separate from the former one. Should the surface of the deposit be not perfectly smooth, it may be rubbed with a piece of smooth flag or pumice stone with water; after which, by applying heat and using spirits of turpentine, the wax is washed off, leaving on the plate a copy in relief of the design cut out in the coating. The plate can now be printed from at an ordinary printing press. If the wax has been completely removed from the lines by the graver and the nitric acid, the deposit adheres as firmly to the plate as if it were a part of it. Thus we have an original species of welding or connecting pieces of metal together. Ordinary welding depends upon the partial liquefaction of the two pieces by heat; but here we can connect them without heat or liquefaction, by reducing one to atoms and depositing it on the other. The strength and solidity of the deposit depends on the slowness with which it has gone on. The slower and more deliberately the particles fall into their places, as it were, the more perfect the atomic structure which is built up. When the operation is too quick the metal formed resembles glass suddenly cooled, it is exceedingly brittle. Forty-eight hours is the least time that should be allowed for the formation of a relief design, but four or five days are required for a plate of strength and solidity. The process may be quickened if we increase the temperature, for it seems this causes the particles to arrange themselves with greater perfection in the same time. It is for multiplying copper-plate engravings that the new art promises to be the most eminently useful. Although from the great durability of steel, ten-fold the number of impressions can be taken from a steel plate than from one of copper, the latter is generally preferred by engravers as a much pleasanter material to work upon, and is always used for the highest order of historical engravings. By the new process the objection against copper, that the plate is soon worn out, is done away with, because any number of electrotype duplicates of the original plates can now be taken at a very inconsiderable expense, and the impressions therefore multiplied *ad infinitum*. A wood engraving may be operated with in the very same manner. It being in relief, the pressure required is only what is necessary for medals, and is not found to injure the design. It is a great and fertile principle both in art and science. Its advantages in the arts are exemplified by what we have already described as its achievements; but we can easily imagine a much wider application of it. The very fact that we have metal in a state of entire disintegration, ready to go where we please, and re-construct itself in any form we please, will suggest many important uses to which it may be turned. The application of the agency of fire to melt looks rude and old-fashioned compared with the application of the agency of electricity to resolve into atoms; and we have no doubt that there are many cases in which the latter will displace the former. The worth of this principle to science must also be great. The ultimate particles of matter can never be directly viewed by the eye; but here is a case in

AN EARTHENWARE TEA-POT RETAINS THE HEAT ONLY ONE-EIGHTH OF THE TIME THAT A SILVER OR POLISHED METAL POT DOES.

which they can be viewed indirectly through the reason. It is a great thing to have them existing in a state of separation and independence, and that on many accounts. For, in the first place, we can learn something about them, by studying the circumstances under which they *entered this state*. We can learn, for instance, at the first dive (supposing we were taught nowhere else), that when these particles of copper, of which we have been speaking, entered into combination with the sulphuric acid, they lost entirely their affinity for one another; or, in general terms, that when any substance enters into combination with another substance its particles lose their cohesion; and from this again we conclude, that the affinities of the ultimate particles of bodies are not, like gravitation, inherent, unalterable principles, but vary with all kinds of circumstances. This is a great and pregnant fact, receiving confirmation from many quarters, and particularly from the whole cluster of facts connected with electrical decomposition. But, in the second place, we can learn much by considering the circumstances under which these particles *go together again*. One instructive circumstance is, the necessity of a metallic nucleus. A second instructive circumstance is, the dependence of the firmness and solidity of the structure, on the temperature and on the slowness of the process. This may prove one of the elements by which we may, on some future day, compute the size of the atoms, and decide whether the atoms of different substances do not differ very much in size, and whether or not one reason why gold surpasses in brilliancy and compactness, and in many other respects, lead, or zinc, or iron, may be that it is composed of smaller and finer atoms than these. In the third place we can learn much by *varying the circumstances* of the deposition. It can be tried with different metals, with different solutions and at different temperatures; it may be known whether such metals as gold, which has scarcely any *grain* or regular crystalization, are different in structure when deposited with different degrees of rapidity. It is exceedingly interesting to inquire how particles draw together and acquire their old cohesion, and how a quick or hurried deposition varies from a slow one. Such points as these, dark and obscure as they are at present, seem perfectly within the range of the human faculties, now when so many fine fields of experiment are open."

VOL'TA, in music, an Italian word, signifying that the part is to be repeated, one, two, or more times.

VOL'TAISM, that branch of electrical science which has its source in the chemical action between metals and different liquids.——*Voltaic pile*, a column formed by successive pairs of metallic discs, as silver and zinc, with moistened cloth between every two contiguous pairs.——*Voltaic battery*, the larger forms of voltaic apparatus, used for accumulating galvanic electricity. [See GALVANISM.]

VOL'UME (*volumen*), properly signifies a roll or book, so called *a volvendo*, because the ancient books were rolls of bark or parchment. This manner lasted till Cicero's time. The several sheets or pieces were glued or pasted end to end, and written only on one side. At the bottom a stick was fastened, called *umbilicus*, round which it was rolled; and at the other end was a piece of parchment, on which the title of the book was written in letters of gold. Of such volumes, Ptolemy's library in Alexandria contained, as some authors say, 700,000.

VOL'UNTARY, in music, a piece played by a musician extemporarily, according to his fancy.

VOL'UNTEER, a person who enters into military or other service of his own free-will, as was the case in England during our war with Buonaparte.

VOLU'TA, in natural history, a genus of univalve shells, with an oblong mouth, a clavicle sometimes erect and sometimes depressed, and sometimes coronated at top. To this genus belong the admiral shells, tiger shells, &c.

VOLU'TE, in architecture, a kind of spiral scroll, used in the Ionic and Composite capitals, of which it makes the principal characteristic and ornament.

VOR'TEX, the circular motion of a fluid, which increases in velocity by the continuity and viscidity of the parts; it then diminishes and fines off till it ceases, usually causing a cavity in the centre, owing to the centrifugal force of the parts.

VOTE, the suffrage or resolve of each of the members of an assembly, where any affair is to be carried by a majority; but more particularly used for the resolves of the members of either house of parliament.

VOW, a solemn and religious promise, or oath. [See OATH.] The use of vows is found in most religions. They make up a considerable part of the pagan worship, being made either in consequence of some deliverance, under some pressing necessity, or for the success of some enterprize. Among the Jews, all vows were to be voluntary, and made by persons wholly in their own power; and if such person made a vow in anything lawful and possible, he was obliged to fulfil it. Among the Romanists, a person is constituted a religious by taking three vows, that of poverty, chastity, and obedience. ——*Vows*, among the Romans, signified sacrifices, offerings, presents, and prayers made for the Cæsars and emperors, particularly for their prosperity and the continuance of their empire.

VULCAN'IC THEORY, a system which ascribes the changes on the earth's surface to fire, while others ascribe the whole to water, under a theory called Neptunian.

VUL'GATE, a very ancient Latin translation of the Bible, which was translated from the Greek of the Septuagint. It is the only one acknowledged by the Romish church to be authentic.

VUL'PINITE, a mineral of a grayish white colour, splendent and massive, with a foliated structure.

A MIXTURE OF CHLORIDE OF SILVER, CHALK, AND PEARLASH, IS USUALLY EMPLOYED FOR SILVERING BRASS.

VULTURE *(vultur)*, in natural history, a genus of birds of the order *Accipitres*. The birds of this genus are rapacious to an extreme degree, and sometimes feed in the midst of cities unterrified. They prefer food that is tainted to that which is fresh: they are found most numerous in warm climates, and must be regarded as a race of creatures eminently useful in clearing the surface of the globe from putrid remains, which would otherwise infect the air, and produce all the ravages and mortality of pestilence. There are seventeen species, of which we shall notice only the *Vultur Sagittarius*, or the secretary vulture, which is distinguished for its size, being when standing upright full a yard high. It is found in Africa, and in the Phillippine islands; and lives on vermin. It takes up tortoises in its claws, and dashes them to the ground with the greatest violence, and will repeat the process till these animals are completely killed. The *condor* is the largest of the vulture species.

W.

W, the twenty-third letter of the English alphabet, takes its written form from the union of two V's, and its name of *double u* from the Roman capital V representing that which we call U. In English it is always followed by a vowel, except when followed by *h*, as in *when*, or by *r*, as in *wrong*. The *w*, being a strong breathing, is nearly related to all aspirated sounds, and through them again to the gutturals, so that we find *w* and *g* often interchanged in different languages, as in the words *William*, *Guillaume*, &c.

WACKE, in mineralogy, a siliceous earth, intermediate between clay and basalt. Its colour is a greenish gray, brown, or black; it is opaque, and unctuous to the touch.

WAD, or WAD'DING, a stopple of paper, tow, old rope-yarn, &c. forced into a gun, to keep in the powder and shot.

WADD, in mineralogy, plumbago or black lead. Black wadd is an ore of manganese found in Derbyshire. There are four kinds; fibrous, ochery, pulverulent, and dendritic.

WAD'SETT, an ancient tenure or lease of land in the Highlands of Scotland, which seems to have been upon a kind of mortgage.

WA'GER OF BATTLE, or BAT'TEL, an ancient mode of trial by single combat, where, in appeals of felony, the appellee might fight with the appellant to prove his innocence; and it is but recently that this relic of barbarism and injustice has been abolished. It was also used in affairs of chivalry and honour, and in civil cases upon issue joined in a writ of right.

WA'GER OF LAW, the offer, on the part of the defendant in an action of debt by simple contract, to take an oath in court in the presence of eleven compurgators, that he owes the plaintiff nothing in the manner and form as he has declared, whereupon the law allows him his discharge.

WA'GES. [See LABOUR.]

WAG'TAIL, in ornithology, a small bird with long legs and tail, which frequents the margins of ponds and water-courses, and is continually elevating and depressing the tail. It is a species of *motacilla*.

WAIFS, in law, goods found, of which the owner is not known, and which are claimed by the crown. These were originally such goods as a thief, when pursued, threw away to prevent his being apprehended.

WAIN'ABLE, an epithet for land that is tillable, or may be ploughed.

WAIST, in a ship, that part which is between the quarter-deck and forecastle: but in ships where there is no quarter-deck, the waist is the middle part of the ship.——The small part of the body between the breast and hips.

WA'ISTCLOTHS, coverings of canvas or tarpaulings for the hammocks, stowed on the gangways, between the quarter-deck and forecastle.

WAITS, itinerant musicians whose nocturnal perambulations give us notice that the joyful festival of Christmas is approaching.

WA'IVER, in law, the passing by, or declining to accept a thing; applied either to an estate, to a plea, &c.

WA'IWODE, in the Turkish empire, the governor of a small province or town.

WAKE, a vigil: the feast of the dedication of the church, formerly kept by watching all night.——A strange practice of celebrating funeral rites by the lower orders in Ireland, which has been thus described by Miss Edgeworth:—"At night the body is *waked*; that is to say, all the friends and neighbours of the deceased collect in a barn or stable, where the corpse is laid upon some boards, or an unhinged door, supported upon stools, the face exposed, the rest of the body covered with a white sheet. Round the body are stuck, in brass candlesticks, which have been borrowed perhaps at five miles' distance, as many candles as the poor person can beg or borrow, observing always to have an odd number. Pipes and tobacco are first distributed, and then, according to the ability of the deceased, cakes and ale, and sometimes whiskey, are *dealt* to the company." The *lively* scenes which generally follow an exhibition of this kind will, we imagine, be no more heard of, now that Father Mathew has the power to exorcise the demon of in-

IN THE TROPICAL REGIONS MANY BIRDS BUILD PENDULOUS NESTS, ATTACHED TO THE BOUGHS OF TREES, TO SECURE THEM FROM SNAKES AND MONKEYS.

temperance.——The *wake of a ship*, is the track it leaves in the water, formed by the meeting of the water, which rushes from each side to fill the space which the ship makes in passing through it. By her *wake* the sailors are enabled to judge what way the ship makes. If the wake be right astern, they conclude she makes her way forwards; but if it be to leeward a point or two, then they conclude she falls to the leeward of her course. When one ship, giving chase to another, is got as far into the wind, and sails directly after her, they say, she has got *into her wake*.

WALES OF A SHIP, an assemblage of strong planks, extending along a ship's sides, throughout the whole length, at different heights, and serving to strengthen the decks and form the curves. They are distinguished into the *main wale* and the *channel wale*.

WALK'ING, the power of animal locomotion, derived from nervous direction of the muscles, by which one set acts against the earth, and confers an equal power of re-action on another set; all animal strength being a mere transfer from a set of muscles acted upon by the earth to another set equally acting on the earth or some other body. Thus, by motion a man adds nothing to his weight in a pair of scales, and a weight put into his arms is not diminished by his energy in supporting it; for a man of 140lbs. carrying 60lbs. requires for a balance 200lbs. of weights in the opposite scale. Respiration and food create nervous excitement; this directs the muscles; and the muscles by action and re-action, like the two ends of a lever, produce animal strength and motion.

WALL'-CRESS, in botany, a plant of the genus *Arabis*: also another plant of the genus *Turritis*.

WALL'ERITE, in mineralogy, an argillaceous kind of earth, found in small compact masses of the size of a nut, white and opaque, or yellowish and translucent.

WALL'-EYE, the *glaucoma*, a disease in the crystaline humour of the eye.——In horses, an eye in which the iris is of a very light gray colour.

WALL'-FLOWER, in botany, a hardy evergreen plant of the genus *Cherianthus*, which, in the wild state, grows in the clefts of rocks and old walls, producing a fine golden-yellow flower, strongly and agreeably scented. When cultivated it is a beautiful and favourite ornamental plant, the flowers being of various shades, large, and brilliant. There are about thirty species.

WALL'-KNOT, in the marine, a particular sort of large knot raised upon the end of a rope by untwisting the strands and interweaving them against each other.

WALL-PEPPER, in botany, the *Sedum acre* of Linnæus, a perennial.

WALTHE'RIA, in botany, a genus of plants, class 16 *Monadelphia*, order 2 *Pentandria*. The species are perennials.

WAL'NUT, in botany, a well-known tree and its fruit, of the genus *Juglans*. Previously to the very general introduction of mahogany, the wood of the walnut-tree was extensively used by cabinet-makers and turners; and it is considered superior to every other sort of wood for the mounting of guns.

WAL'RUS, in zoology, the morse or sea-horse. [See MORSE.]

WALTZ, a national German dance, but now common in England, and other European countries. To waltz with effect, much grace and precision are necessary, or else it becomes a mere vulgar exercise. The waltz of the north of Germany was grave and slow, whilst that of the south is gay, and the quick gay waltz is by far the most prevalent.

WAM'PUM, shells used by the American Indians as money or a medium of commerce. These shells are run on a string, and form a broad belt, which is worn as an ornament or girdle.

WANDEROO', in zoology, a baboon of Ceylon and Malabar.

WAN'LASS, or *driving the wanlass*, a phrase used in law for driving deer to a stand, that the lord may have a shoot; an ancient customary tenure of lands.

WAP'ENTAKE, in law, a division or district, peculiar to some of the northern counties of England, and answering to the *hundred* or *cantred*, in other counties. This name had its origin in a custom of touching lances or spears when the chief or leading man of the hundred entered on his office.

WAR, a contest between nations or states, carried on by force, either for defence, for redressing wrongs, for the extension of commerce or acquisition of territory, or for obtaining and establishing the superiority and dominion of one over the other. When war is commenced by attacking a nation in peace, it is called an *offensive* war, and such attack is *aggressive*. When war is undertaken to repel invasion or the attacks of an enemy, it is called *defensive;* and such a war is not only justifiable, but laudable.——*Civil war*, a state of internal hostility, in which opposite parties of the same nation contend for the mastery by force of arms.——*Holy war*, a term given to a crusade undertaken for the purpose of delivering the Holy Land, or Judea, from infidels. These *holy* wars were carried on by most *unholy* means.

WARD, in law, the heir of the king's tenant *in capite*, during his nonage; whence the term has since been applied to all infants under the power of guardians, or such as are under the control and protection of the lord chancellor, who are called *wards in chancery*.——A certain district, division, or quarter of a town or city, committed to an alderman. There are twenty-six *wards* in London.

WAR'DEN, a keeper; as, the warden of the Fleet or Fleet prison.——*Warden of a college*, the head or president.——*Warden of the cinque ports*, an officer or magistrate who has the jurisdiction of certain ports or havens in England. [See CINQUE-PORTS.]

WARD'MOTE, a court kept in every ward in London, usually called the ward-

THOUGH THE POPPY IS IN ITSELF HIGHLY NARCOTIC, THE OIL OF THE POPPY-SEED HAS NONE OF ITS PROPERTIES.

THE OIL OF THE POPPY-SEED IS PERFECTLY WHOLESOME, AND IS EXTENSIVELY USED IN ADULTERATING OLIVE OIL.

mote court; of this court the inquest has power every year to inquire into all deficiencies with regard to the officers of the ward.

WARD'-ROOM, in a ship, a room over the gun-room, where the lieutenants and other principal officers sleep and mess.

WARP, in weaving, the threads which are extended lengthwise in the loom, and crossed by the woof.——In a ship, a rope or towing line, employed in drawing, towing, or removing a boat or vessel.——In agriculture, a slimy substance deposited on land by marine tides, by which a rich alluvial soil is formed.

WAR'RANT, in law, a precept authorizing an officer to seize an offender and bring him to justice.——*Warrant of attorney*, an authority given to an attorney by his client to appear and plead for him; or in a more general sense, that by which a man appoints another to act in his name, and warrants his transaction.——*Search warrant*, a precept authorizing a person to enter houses, &c. to search for stolen or contraband goods, or to discover whether a criminal be there concealed.——*Warrant officer*, an officer holding a warrant from the navy board, such as the master, surgeon, purser, &c. of a ship.——*Press warrant*, in the navy, a warrant issued by the admiralty, authorizing an officer to impress seamen.

WAR'REN, a franchise or privileged place for keeping beasts and fowls of the warren, as hares, partridges, and pheasants.

WAR'RANTY, in law, a covenant by deed, made by one party to another, to secure to him the enjoyment of an estate or other thing bargained for. Warranty is *real*, when annexed to lands and tenements granted in fee or for life, &c., and *personal*, when it respects goods sold or their quality. If a man sells goods which are not his own, or which he has no right to sell, the purchaser may have satisfaction for the injury. And if the seller expressly warrants the goods to be sound, and they prove to be otherwise, he must indemnify the purchaser. But the warranty must be at the time of sale.

WASP (*Vespa vulgaris*), an insect, the female of which has a sting, which it employs when attacked, or in supposed danger. Their nests are highly curious structures, divided into cells, with walls made of vegetable substances; as they do not lay up honey like bees, they die, or are torpid in the winter. The *hornet* is larger than the wasp, and forms its nest in holes or roots of trees, but both are equally voracious. [See VESPA.]

WAS'SAIL-BOWL, a large drinking vessel, in which the Saxons, at their public entertainments, drank health to each other, saying, "Wæs hæl!"—"Health be to you!" or "Your health!" It was also a Saxon custom, to go about with such a bowl, at the time of the Epiphany, singing a festival song, drinking the health of the inhabitants, and, of course, collecting money to replenish the bowl. This custom, from which christmas-boxes, christmas-ale, bellmen's verses, and carols, are all, probably, more or less derived, was called *wassailing*, and those who practised it, *wassailers*. In some parts of the kingdom, the primitive custom, and its name, are still retained.

WASTE, in law, an epithet for lands which are not in any man's occupation, but lie common; so called because the lord cannot make such profit of them as of other fields.

WATCH AND WARD, the custom of watching by night, and warding or keeping the peace by day in towns and cities, which was first appointed by Henry III.

WATCH, in the marine, denotes the space of time during which one division of the ship's crew remains upon deck, to keep watch at night. It never exceeds four hours, and is divided into three parts; namely, the *first watch*, from 8 to 12, the *middle watch* from 12 to 4 in the morning, and the *morning watch* from 4 to 8. There are also what are called *dog-watches*, which consist of only two hours, by the division of the morning watch into two parts.——"To set the *watch*," to appoint the division of the crew to enter upon the duty of the watch. "To relieve the *watch*," to relieve those who have been upon the duty by changing the watch.——*Watch-bill*, a list of the officers and crew who are appointed to the watch, together with the several stations to which each man belongs.

WATCH, a pocket instrument for measuring time, in which the machinery is moved by a steel spring, coiled up, and acting by various ingenious contrivances. The spring is in a brass box, called the barrel, and combined with a pyramidal fusee, on which a connecting chain is wound by the key. The spring being fastened at one end to the barrel, and at the other end to an arbor, or axle, unwinds off the fusee, turning it, and keeping the watch going, while the action accords by its various size with the varied energy of the spring. The force being thus produced, other wheels are put in motion, and time is exactly measured by the hands on the dial. This manufacture consists of almost innumerable departments, of which the fifteen principal are: 1. The movement maker, who divides it into various branches; viz. pillar-maker, stop stud-maker, frame-mounter, screw-maker, cock and potence-maker, verge-maker, pinion-maker, balance-wheel-maker, wheel-cutter, fusee-maker, and other small branches. 2. Dial-maker; who employs a copper-maker, an enameller, painter, &c. 3. Case-maker; who makes the case to the frame, employs box-maker, outside case-maker, and joint-finishers. 4. Pendant-maker (both case and pendant are sent to Goldsmiths'-hall to be marked). 5. Secret-springer and spring-liner; the springer and liner are divided into other branches; viz. the spring-maker, button-maker, &c. 6. Cap-maker, who employs the springer, &c. 7. Jeweller; which comprises the diamond cutting, setting, making ruby-holes, &c. 8. Motion maker, and other

THE BEATS IN AN HOUR IN A COMMON WATCH ARE 17,280, AND IN A COMMON SECONDS' CLOCK THEY ARE 3600.

branches, viz. slide-maker, edge-maker, and bolt-maker. 9. Spring-maker, (i. e. main-spring) consisting of wire-drawer, &c. hammerer, polisher, and temperer. 10. Chain-maker; this comprises several branches, wire-drawer, link-maker and rivetter, hook-maker, &c. 11. Engraver; who also employs a piercer and name-cutter. 12. Finisher, who employs a wheel and fusee-cutter, and other workers in smaller branches. 13. Gilder is divided into two, viz. gilder and brusher. 14. Glass and hands; the glass employs two, viz. blower and maker: hand-maker employs die-sinker, finisher, &c. 15. Fitter-in, who overlooks the whole, fits hands on, &c. Watches were invented about the year 1500; and the trade is much esteemed in all countries. The Swiss have carried it to the highest degree of perfection.

WATCH'MAKER, an artificer who arranges and puts together the wheels and parts of a watch, after they are cast and prepared by other artizans.

WATER, a transparent and colourless compound fluid, destitute of smell, nearly without taste, and almost incompressible, a pressure equal to 2000 atmospheres occasioning a diminution of only one-ninth of its bulk. It is composed of two substances, neither of which can be exhibited separately, except in the gaseous form; and when aeriform, they are known, the one as hydrogen gas, or inflammable air; the other as oxygen gas, or vital air. These gases, in the proportion of about two measures of hydrogen to one of oxygen, when united chemically, and reduced from the form of air to that of a liquid, constitute the fluid we call *water*. It passes to the solid state at 32° Fahr. When it shoots into ice, it forms in the first place a prism, not very regular in shape, but very long; and undergoes an enlargement in volume of eight parts to nine. In the act of freezing, too, the greater part of the air, which the water holds loosely dissolved, is expelled. At 212°, under a medium atmospheric pressure, water boils, but returns unaltered to its liquid state on resuming any degree of heat below this point. All water which has been exposed to the atmosphere (as spring and river water) contains a portion of air, from which it derives a sparkling quality and agreeable taste. It is thus also fitted for supporting the respiration of fishes. A strong attraction is exerted between water and the fixed alkalies, as also between it and the alkaline earths. From the extensive solvent power of water, it is scarcely ever met with pure in nature; every kind being impregnated either with saline, earthy, or mineral substances. The simple waters are the following:—1. *Distilled water*. This is the lightest of all others, containing neither solid nor gaseous substances in solution, is perfectly void of taste and smell, colourless, and transparent, has a soft feel, and wets the fingers more readily than other. As it freezes exactly at 32° of Fahrenheit, and boils at 212° under the atmospherical pressure of 29.8 inches, these points are made use of as the standard ones for thermometrical division; and its specific weight being always the same under the mean pressure and temperature, it is employed for the comparative standard of specific gravity. 2. *Rain-water*, the next in purity to distilled water, is that which has undergone a natural distillation from the earth, and is condensed in the form of rain. It so nearly approaches absolute purity, when unmixed with the sulphate of lime and calcareous matter which it imbibes when it falls in towns, from the mortar and plaster of the houses, as probably to be equal to distilled water for every purpose except in the nicer chemical experiments. 3. *Ice* and *snow-water*. This equals rain-water in purity, and, when fresh melted, contains no air, which is expelled during congelation. 4. *Spring-water*. Under this comprehensive class are included all waters that spring from some depth beneath the soil, and are used at the fountain head, or at least before they have run any considerable distance exposed to the air. When the ingredients are not such as to give any peculiar medicinal or sensible properties, it is distinguished as a hard or a soft spring, sweet or brackish, clear or turbid, or the like. By far the greater number of springs are cold; but as they take their origin at some depth from the surface, and below the influence of the external atmosphere, their temperature is, in general, pretty uniform during every vicissitude of season, and always several degrees higher than the freezing point. The water of deep wells is always much harder than that of springs which overflow their channel; for much agitation and exposure to air produce a gradual deposition of the calcareous earth; and hence spring water often incrusts to a considerable thickness the inside of any kind of tube through which it flows, as it arises from the earth. The specific gravity of these waters is also, in general, greater than that of any other kind of water, except that of the ocean. Springs that overflow their channel, and form to themselves a limited bed, pass insensibly into the state of river water, and become thereby altered in some of their chemical properties. 5. *River water*. This is in general much softer and more free from earthy salts than the last, but contains less air of any kind; for, by the agitation of a long current, and in most cases a great increase of temperature, it loses common air and carbonic acid, and much of the lime which it held in solution. The specific gravity thereby becomes less, the taste is not so harsh, but less fresh and agreeable, and out of a hard spring is often made a stream of sufficient purity for most of the purposes where soft water is required. Some of the mountain lakes and rivulets, however, which take their rise from a siliceous rock, and flow in a sandy or stony bed, are from the outset remarkably pure. 6. *Stagnant waters*. These generally abound with the remains of animal and vegetable matter undergoing decomposition; and as they are generally shallow, they receive the

full influence of the sun, which further promotes all the changes which are going on within them. The decidedly noxious effects produced by the air of marshes and stagnant pools have been often supposed to extend to the internal use of these waters. It ought, however, to be observed, that they are generally soft, and many of the impurities are only suspended, and therefore separable by filtration. [See MINERAL WATERS.] The great reservoirs of water on the globe are the ocean, seas, and lakes, which cover more than three-fifths of its surface, and from which it is raised by evaporation, and uniting with the air in the state of vapour, is wafted over the earth, ready to be precipitated in the form of rain, snow, or hail. In conclusion we may observe that, regarded as the common food of the vegetable and animal kingdoms, water becomes connected with agriculture, and various mechanical arts to obtain and preserve it, or to diffuse its living streams. Penetrating the atmosphere, and circulating above our heads, it is associated with the whole doctrine of aerial and atmospherical phenomena. It assists largely in painting the beautiful scenery of the sky, and in the whole economy of the clouds, while held in solution as vapour; now answering the purpose of a screen to the earth from the too powerful and scorching rays of the sun, and now yielding in fertilizing showers, and in the gentle dew from heaven, its most essential nourishment. In other views of it, as in the wide-spread seas, it is the handmaid of commerce, the high road of nations; in the larger rivers the foundation of the opulence of cities; spreading or uniting mankind in a great scheme of providence; conveying from shore to shore, and interchanging from town to town, the productions of all the earth. [See ATMOSPHERE, HYDROGEN, OXYGEN, GAS, RAIN, RIVERS, &c.]

WATER, in mineralogy, a term used by lapidaries for the lustre of precious stones. ——In manufactures, a certain lustre, imitating water, fixed on silks, mohairs, &c. ——*Water of separation*, a name given by refiners to aqua fortis, because it separates gold from silver.——*Water*, in marine phraseology, denotes the state of the water at sea, as *high-water*, *low-water*, *foul-water*, *dead-water*, &c.

WA'TER-BAILIFF, in law, an officer in sea-port towns who searches ships, and in London has particular charge of the fish brought to market.

WATER-BETONY, in botany, the *Scrophularia aquatica* of Linnæus, a perennial.

WA'TER-COLOURS, in painting and limning, colours diluted and made with gum-water instead of oil. The principal of the water-colours are as follow: White—Ceruse, white lead, Spanish white, flake white, spodium: Black—Burnt cherry-stones, ivory black, lamp black: Green—Green bice, green verditer, grass green, sap green, verdigris distilled: Blue—Sanders blue, terre blue, blue verditer, indigo, litmus, smalt, Prussian blue, light blue, ultramarine, blue bice: Brown—Spanish brown, Spanish liquorice, umber, bistre, terra de Sienna burnt and unburnt: Red—Native cinnabar, burnt ochre, Indian red, red lead, minium, lake, vermillion, carmine, red ink, Indian lake: Yellow—English ochre, gall stones, gamboge, masticot, ochre de luce, orpiment, Roman ochre, Dutch pink, saffron water, king's yellow, gold yellow, French berries.

WA'TER-COURSE, any natural or artificial stream of water, as a river, a canal, and the like.

WA'TER-CRESS, in botany, the *Sisymbrium nasturtium* of Linnæus, a perennial. It grows on the margin of clear streams, or even partly immersed in the water. Great quantities are consumed as salad; and of late years it has been cultivated to a considerable extent. The plant is also employed in medicine as an antiscorbutic.

WA'TER-FALLS, in ornamental gardening, artificial cascades introduced in pleasure grounds for the purpose of producing ornamental and picturesque effects. They are usually constructed either by means of large rocky stones thrown rudely together with a sort of ridge, or built of masonry in a careful and exact manner, according as the different nature of the circumstances and situations may require.

WA'TER-GAVEL, in law, a rent paid for fishing, or any other benefit received from some river.

WA'TER-LEVEL, a contrivance for finding the level of roads or grounds by means of a surface of water or other fluid, founded on the principle that water always finds its own level. It consists of a long wooden trough, which, being filled with water, shows the line of level.

WATER-LILY *(nymphæa)*, in botany, a beautiful genus of aquatic plants, the flowers of which are large, and contain numerous petals, so as to appear double. In the morning, they raise themselves out of the water to expand, and close again, reposing upon the surface, in the afternoon.

WATER-HYSSOP, in botany, the *Gratiola officinalis* of Linnæus, a perennial.

WA'TER-LINE, a horizontal line supposed to be drawn about a ship's bottom, at the surface of the water. This is higher or lower, according to the depth of water necessary to float her.

WA'TER-LOGGED, is said of a ship when, by leaking, and receiving a great quantity of water into her hold, she has become so heavy as to be totally unmanageable.

WA'TERMAN, one who plies with a boat upon a river; a ferryman.

WA'TER-MARK, the utmost limit of the rise of the flood.——The mark visible in paper, which is made in the manufacturing of it.

WA'TER-MELON, in botany, a plant and its fruit, of the genus *Cucurbita*. To bring it to perfection, this plant requires a warm climate, and a dry, sandy, warm soil. The fruit is remarkably rich, and it abounds with a sweetish liquor.

WA'TER-MILL, a mill whose machinery

THE YOUNG SHOOTS OF THE BROAD-LEAVED SPECIES OF LILIES ARE EATEN BY THE TURKS AS WE EAT ASPARAGUS.

is moved by water, and thus distinguished from a wind-mill. Water-mills for grinding corn were invented by Belisarius, while besieged in Rome by the Goths, 555. The ancients parched their corn, and pounded it in mortars. Afterwards mills were invented, which were turned by men and beasts with great labour.

WA'TER-ORDE'AL. [See ORDEAL.]

WA'TER-ORME, in the marine, an epithet for the state of a ship which has barely a sufficient depth of water to float her off the ground.

WA'TER-POISE, in mechanics, an instrument for trying the strength of liquors.

WA'TER-SHOOT, in botany, a sprig which springs out of the root or stock of a tree.

WA'TER-SPOUT, an aqueous meteor, most frequently observed at sea, rising at first in the form of a small cloud, which afterwards enlarges, and, assuming the shape of a cylinder or cone, is driven furiously by the wind, and often accompanied with thunder and lightning, causing destruction, when it bursts, to whatever happens to be within the sphere of its action.

WA'TER-TABLE, in architecture, a ledge in the wall of a building, about 18 or 20 inches from the ground.

WA'TER-WAY, in a ship's deck, a piece of timber, forming a channel for conducting water to the scuppers.

WA'TER-WORKS, in general, denote every description of machinery employed in raising or sustaining water; in which sense, water-mills of all kinds, sluices, aqueducts, &c. may be so called. The term water-works, however, is more particularly used for such machines as are employed only in raising water.

WAT'TLE, the fleshy excrescence that grows under the throat of a cock or turkey, or a like substance on a fish. Also, a twig or flexible rod; and hence, a hurdle.

WAVE, any moving swell on the surface of water, from the smallest ripple to the billows of a tempest.

WAVED, in heraldry, indented.——In manufactures, variegated in lustre; as, *waved* silk.——In botany, rising and falling in waves on the margin, as a leaf.

WA'VELLITE, in mineralogy, a subphosphate of alumine; commonly found in crystals, which usually adhere and radiate, forming hemispherical or globular concretions, from a very small size to an inch in diameter.

WA'VY, in heraldry, one of the crooked lines of which ordinaries are frequently borne in coat armour.

WAX, in natural history, a thick, viscid, unctuous substance, with which bees build their cells, and which they collect from the apices of flowers. The bees carry the *farina* or *pollen* on their hinder legs; but, according to Reaumur, this dust does not contain any real wax, nor is this latter substance produced by the mixture of the farina with a glutinous liquor, by trituration, or by any other mechanical process. After long and attentive observation, this naturalist found, that bees actually eat the pollen they collect, and that this pollen is converted, by an animal process, into wax. The pollen gathered by the bees is of various colours; but the combs they construct are always of the same. Every comb, especially when it is newly made, is of a pure white colour. This is liable to be injured by age, the operation of the air, and by other accidents. To bleach wax, therefore, it is only necessary to extract the foreign bodies that have insinuated themselves into its substance, and obscured its original colour: hence the distinction, in commerce, between white and yellow wax; the first being bleached, and the second only melted. [See BEE.]

WAX'ING, in chemistry, the preparation of any matter to render it fit for melting. Also, the process of stopping out colours in calico-printing.

WAX-MYRTLE, in botany, the *Myrica cerifera*, or bay-berry, a North American shrub, the berries of which are covered with a greenish wax, called myrtle-wax, or bay-berry tallow.

WAX-PALM, in botany, the *Cerozylon andicola*, a species of palm growing on the Andes, the stem of which is covered with a secretion, consisting of two-thirds resin and one-third wax.

WAX'-WORK, figures formed of wax, in imitation of real persons. Where the likenesses are correct, and the artist has displayed good taste in adjusting the draperies, &c., a collection of wax-work figures, representing public characters (such, for instance, as Madame Tussaud's), affords an amusing exhibition. But figures of this kind overstep the proper limit of the fine arts; and their ghastly fixedness has a tendency to make us shudder even while gratifying our curiosity. At present wax is used for anatomical preparations, or for fruits; it also serves the sculptor for his models and studies.

WAYS AND MEANS, the financial resources to meet the public expenditure, or supplies voted by parliament.

WEATH'ER, the state of the air or atmosphere with respect to heat or cold, wetness or dryness, calm or storm, &c. [See the various words connected herewith; as, AIR, ATMOSPHERE, CLOUD, RAIN, STORMS, &c.]——*To weather*, in seamen's language, to sail to the windward of something else; as, to *weather* a cape.——*Stress of weather*, a phrase implying violent winds, or the force of tempests.——In a variety of other compound words *weather* signifies towards the wind or windward; as, in weather-bow, weather-braces, weather-gauge, weather-quarter, weather shrouds, weather-side, &c.

WEATH'ER-CLOTHS, in a ship, long pieces of canvas or tarpauling used to preserve the hammocks from injury by the weather when stowed, or to defend persons from the wind and spray.

WEATH'ER-GAUGE, or WEATH'ER-GAGE, a naval term: a ship is said to have the *weather-gauge* of another, when she is at the windward of her.

WEATH'ER-HELM. A ship is said to carry a *weather-helm* when she is inclined to come too near the wind.

WEATH'ER-TIDE, the tide which sets against the lee-side of a ship, impelling her to windward.

WE'AVING, in manufactures, the act or art of forming cloth in a loom, by the union or intertexture of threads, which is done by crossing the threads by means of a shuttle. The threads first laid in length are called the *warp;* those which cross them in the direction of their breadth, are called the *weft* or *woof*. Weaving is an art of great antiquity, and gives employment in all nations to a large portion of the population. In England, Leeds is the centre of woollen cloth weaving; Manchester of cotton weaving; Macclesfield of silk weaving; Nottingham of stocking weaving; and Kidderminster of carpet weaving.

WEB (of a spider) a plexus of very delicate threads or filaments which a spider spins. [See SPIDER.]

WEB'-FOOTED, in ornithology, palmiped, or having webbed feet, as a goose or duck.

WEDGE, in mechanics, a piece of metal, particularly iron, thick at one end and sloping to a thin edge at the other, used in splitting wood, rocks, &c. It is one of the five mechanical powers, or simple engines; having an almost unlimited advantage over all the other simple mechanical powers; both as it may be made vastly thin, in proportion to its height, in which consists its own natural power; and as it is urged by the force of percussion, or of smart blows, which is a force incomparably greater than any mere dead weight or pressure. To the wedge may be referred all edge-tools, and tools that have a sharp point, in order to cut, cleave, slit, split, chop, pierce, bore, or the like. In the wedge, the friction against the sides is very great, at least equal to the force to be overcome; because the wedge retains any position to which it is driven; and therefore the resistance is at least doubled by the friction.

WED'NESDAY (pron. *wenz'day*), the fourth day of the week, so called from Wodin, or Odin, a deity or chief among the northern nations of Europe.——*Ash Wednesday*, the first day of Lent. Some think the day received this name, or *Dies cinerum*, from the custom in the early ages of the church, of penitents appearing in sackcloth and with ashes on their heads. But, however certain it is that such a practice prevailed, there is no evidence that it was done precisely on that day.

WEED, the general name of any plant that is noxious or useless. The word therefore has no definite application to any particular plant or species of plants; but whatever kinds spring up in fields or gardens that are injurious to crops come under the appellation of *weeds*.

WEEK, a cycle of seven days, founded on the quarters of the moon; the first day, Sunday, being the Christian festival to celebrate the Resurrection; and the seventh, Saturday, being the sabbath of the Jews. [See SATURDAY and SUNDAY.]

WEE'VIL, in entomology, a small insect that does great damage to wheat or other corn, by eating into the grain and devouring the farinaceous parts.

WEIGHT, in commerce, any body of a known weight that is made the measure of weighing other bodies; generally, either a mass of iron, lead, brass, or other metal; as, a pound *weight*, an ounce *weight*, &c. Two sorts of weights are admitted in England, namely, *troy weight* and *avoirdupois weight*. ——In mechanics, anything that is to be sustained, raised, or moved by a machine. ——*Weight*, in a philosophical sense, is that quality of bodies by which they tend towards the centre of the earth and a line perpendicular to its surface. Weight, in short, is *gravity*, and the weight of a particular body is the amount of its gravity, or the force with which it tends to the centre. ——We use the word weight also in very different senses; as, the *weight* (or pressure) of grief; the *weight* of business; an argument of great *weight* (or importance); the dignity of a man's character adds *weight* (influence) to his words.

WELD, in botany, a plant or herb of the genus *Reseda*, that grows in Kent, Herefordshire, and other parts of England, the stalk and root of which are used in dyeing bright yellow and lemon colours. ——*Weld*, in iron works, to unite or hammer into firm union, as two pieces of metal when heated almost to fusion. The heat necessary for welding iron bars is said to be 60° by Wedgwood's pyrometer.

WELL, a cylindrical excavation sunk perpendicularly into the earth to such a depth as to reach a supply of water, and walled with stone or brick to support the earth. [See ARTESIAN WELLS.]——*Well*, in the military art, a depth which the miner sinks under ground, with branches or galleries running out from it, either to prepare a mine, or to discover and disappoint the enemy's mine.

WELSH, the language or general name of the people of Wales. The Welsh call themselves *Cymry*, their country *Cymru*, and the name of their language, *Cymraeg*. They are supposed to be the *Cimbri* of Jutland. It was to Wales that the ancient Britons fled when Great Britain was invaded by the Saxons; and there they long maintained themselves as an independent state, preserving their own language, and being governed by their native kings; till Llewellin, their last prince, being vanquished and slain in 1283, while resisting the forces of Edward I., the country was united to England. The people submitted to the English dominion with extreme reluctance; and Edward, as a conciliatory means, promised to give them for their prince a Welshman by birth, and one who could speak no other language. This notice being received with joy, he invested in the principality his second son, Edward, then an infant, who had been born at Carnarvon. The death of his eldest son, Alphonso,

happening soon after, young Edward became heir also of the English monarchy, and united both nations under one government; but some ages elapsed, before the animosity which had long subsisted between them was totally extinguished.

WER'EGILD, in our ancient law, a compensation paid for a man killed by the person who caused his death. Blackstone says it was paid partly as a penalty to the king for the loss of a subject, partly to the lord of the vassal, and partly to the next of kin.

WER'NERITE, a mineral, regarded by Werner, the German mineralogist, as a subspecies of scapolite. It is found massive, and crystalized in octahedral prisms with four-sided pyramidical terminations, disseminated in rocks of feldspar. It is of a grayish or olive-green colour, with a pearly lustre, and melts into a white enamel.

WEST, one of the cardinal points, being that point of the horizon where the sun sets at the equinox, or any point in a direct line between the spectator or other object, and that point of the horizon. In a less strict sense, it is that region of the hemisphere near the point where the sun sets when in the equator.——Formerly the empire of Rome was called the empire of the *West*, in opposition to the empire of the East, the seat of which was Constantinople.

WHALE, in zoology, the general name of an order of huge animals inhabiting the ocean, arranged under the name of *Cete* or *Cetacea*, and belonging to the class *Mammalia* in the Linnæan system. The common whale is of the genus *Balæna*, and is said to measure sometimes from 80 to 100 feet. The blubber of the whale contains the oil, which is an article of commerce, and the horny laminæ in the upper jaw yield what is called *whalebone*. The cetaceous animals are characterized by blowing holes or spiracles placed on the fore part of the skull; feetless; pectoral fins without nails; and a horizontal tail. The genera that belong to the order are the four following: monodon, narwhal, or narvarl; balæna, or proper whale; physeter, or cachalot; and delphinus, or the dolphin, including the common dolphin, porpoise, and grampus. The external conformation of the fishes of this genus, no less than their immense size, serves to characterize them among the other inhabitants of the deep. They are covered with a dark coloured cinereous skin: they move usually against the wind, and with vast rapidity, by means of a horizontal tail, aided by three fins, two pectoral, and one back fin; though in some species the last is wanting. Animals of such enormous strength and magnitude, we might imagine, would spread terror and devastation all around them, and make an indiscriminate slaughter of the inferior tribes. No creature, however, is less voracious than the common whale: little animal substance is ever found in its stomach; it feeds, as some allege, upon different insects that float on the surface; according to others, upon the medusa or seablubber. Its food, we are certain, must be extremely minute, for the capacity of its throat does not exceed four inches! a size beyond all proportion smaller than that of other large aquatic animals. To a slender appetite the whale adds peaceable and harmless manners: it pursues no other inhabitant of the waters, but leads an easy and quiet life on the bosom of the waves, and is inoffensive in proportion to its ability to do mischief. There is a strong analogy between the manners of the whale and the elephant: both are the strongest and largest in their respective elements; neither offers injury; and each is terrible when provoked to resentment. But these peaceable and innoxious habits do not equally belong to the whole of the cetaceous order; those of the cachalot tribe being in the highest degree fierce and voracious. [For an account of the whale fishery, &c., see FISHERIES.]

WHEAT, a plant of the genus *Triticum*, and the seed of the plant, which furnishes a white flour for bread, and is the grain most generally used by the human race, except in those countries where rice forms the principal article of food. The varieties of wheat are numerous, though the difference between each kind is not very remarkable. The culture of wheat, from time immemorial, and in different soils and climates, has produced numerous varieties; but the most permanent varieties are the red and white grained, and the spring wheat, which is generally red. Wheat yields a greater proportion of flour than any other grain, and is also more nutritive. Gluten is so essential an ingredient in bread, that fermentation cannot go on without it; hence its inferiority in wet seasons, and when the wheat is blighted or ill ripened; and hence the advantage of having a stock of old grain. The straw of wheat, from dry, chalky lands, is manufactured into hats. Leghorn hats are made from a bearded variety of wheat, not unlike rye, raised on poor sandy soils, on the banks of the Arno, between Leghorn and Florence, expressly for this manufacture. It does not grow above eighteen inches in length, is pulled green, and bleached, like flax, on the gravelly bed of the river. The straws are not split, which renders the plait tougher and more durable.

WHEATEAR, in ornithology, the English name of the *Motacilla œnanthe;* called also *white-tail* and *fallow-finch*.

WHEEL, in mechanics, a simple machine, consisting of a round piece of wood, iron, or other metal, which revolves on an axis. The wheel is one of the principal mechanic powers; it has an important place in most engines; in short, it is of an assemblage of wheels that most engines are composed. The centre of a wheel is like the fulcrum of a lever, and a simple action merely transfers the force on one side to the other side; but if wheels are so connected as to diminish velocity, then power is gained.——*Undershot wheel*, a wheel, the lower periphery of which is acted upon by

a stream of running water, and a common application of power for grinding corn and other purposes.——*Overshot wheel*, a variety of water-wheel, by which water falling on its upper periphery, carries it round, not only by its force, but by its accumulated weight; for it is so constructed as to catch and hold the water in descending, part with it at the bottom, and ascend on the other side empty; and it is a very convenient and powerful structure when the nature of the ground permits.——*Wheel*, in the military art, is the word of command, when a battalion or squadron is to alter its front either one way or the other. To wheel to the right, directs the man in the right angle to turn very slowly, and every one to wheel from the left to the right, regarding him as their centre; and *vice versâ*, when they are to wheel to the left.

WHEEL'-FIRE, in chemistry, a fire for melting metals, &c. which covers the crucible, cupel, or melting-pot, &c.

WHEEL-WORK. Of all the modes of communicating motion, the most extensively useful is the employment of wheel-work, which is capable of varying its direction and its velocity without any limit. Wheels are sometimes turned by simple contact with each other; sometimes by the intervention of cords, straps, or chains, passing over them; and in these cases the minute protuberance of the surfaces, or whatever else may be the cause of friction, prevents their sliding on each other. In light work, where the pressure on the machinery is not very considerable, the wheels and axles are allowed to work by the friction of their surfaces, which is increased by cutting the wood so that the grains of the surfaces in contact shall run in opposite directions; also by gluing upon the surfaces of the wheels and axles buffed leather. There are other ways of transmitting the force of each axle to the circumference of the succeeding wheel. A very common method is, by ropes, straps, bands, or belts, round the circumference of the wheel and axle, which act upon each other. The action is in this manner transmitted by the tension of the rope or strap, and rendered effective by friction with the circumferences on which it is rolled. Wheels and axles connected in this manner are called *band-wheels*. In cases where motion not quite equable is required, as it sometimes happens in the construction of clocks, but more frequently in orreries, the wheels may either be divided a little unequally, or the axis may be placed a little out of the centre; and these eccentric wheels may either act on other eccentric wheels, or if they are made as contrate wheels, upon a lengthened pinion. An arrangement is sometimes made for separating wheels which are intended to turn each other, and for replacing them at pleasure: the wheels are said to be thrown by these operations out of gear and into gear again. When a wheel revolves round another, and is so fixed as to remain nearly in a parallel direction, and to cause the central wheel to turn round its axis, the apparatus is called a *sun and planet wheel*. The teeth of wheels of metal are generally cut by means of a machine. Wheels are denominated *spur*, *crown*, or *bevel-gear*, according to the direction or position of the teeth. If the teeth are perpendicular to the axis of the wheel, and in the direction of its radii, it is called a *spur-wheel*. If the teeth are parallel to the axis of the wheel, and therefore perpendicular to its frame, it is called a *crown-wheel*. Two spur-wheels, or a spur-wheel and pinion which work in one another, are always in the same plane, and have their axes parallel; but when a spur and crown-wheel are in connexion, their planes and axes are at right angles. When the teeth are oblique to the plane or axis-wheel, it is called a *bevelled-wheel*; the use of which is to produce a rotatory motion round one axis, by means of a rotatory motion round another which is oblique to it.

WHEE'ZING, in the veterinary art, a disordered respiration in horses arising from the narrowness of the passages between the bones and the gristles of the nose.

WHELK, in conchology, a shell of the genus *Buccinum*, or trumpet-shell, univalvular, spiral and gibbous, with an oval aperture ending in a short canal.

WHET'STONE, in mineralogy, the *Arenarius novacularis* in the Linnæan system, so called from its property of whetting or sharpening steel.

WHEY, the serum or watery part of milk, which remains after the cream and coagulable matter of that fluid are removed, either by churning, or by separating it with rennet, vinegar, cream of tartar, &c.

WHIG, one of a political party which had its origin in England in the 17th century, in the reign of the Stuarts, when great contests existed respecting the royal prerogatives. Those who supported the king in his high claims were called *Tories*, and the advocates of popular rights were called *Whigs*. The following remarks from a celebrated Whig journal (Edinburgh Review, vol. xxxvii. p. 21-25), may serve to show the state of parties at the accession of the house of Hanover. "It divided England into two parties, the Whigs, or friends of the new establishment, and the Tories and Jacobites, its secret or avowed opponents. The Tories, bigotted to the notion of indefeasible right in the succession to the crown, but apprehensive for their religion if a papist should mount the throne, were distracted between their scruples about the validity of a parliamentary settlement, and their fears, lest, in subverting it, they might restore, or pave the way for the restoration of the Catholic church. Though deterred, by their religious fears, from embarking decidedly in the cause of the Pretender, they kept on terms with his friends, and were not unwilling to disturb, though they hesitated to overturn, a government they disliked, because it was founded on principles they abhorred. The Jacobites, though most of them were zeal-

BURNET, IN HIS "MEMOIRS," SAYS THAT THE WORD "WHIGGAM" USED BY THE SCOTCH IN DRIVING THEIR HORSES, WAS THE ORIGIN OF THE WORD "WHIG."

THE SMOKY FLAVOUR OF WHISKEY IS DERIVED FROM THE TURF USED IN DRYING THE MALT FROM WHICH IT IS DISTILLED.

NO INTIMATIONS OF ANY KIND BETWEEN PARTNERS, DURING THE PLAY OF THE CARDS, ARE TO BE ALLOWED AT WHIST.

ous members of the church of England, had a stronger infusion of bigotry in their composition, and were ready to restore a popish family, and submit to a popish sovereign, rather than own a government founded on a parliamentary title. It was impossible either Tories or Jacobites should have the confidence of the Hanoverian princes; and, therefore, while those divisions subsisted, all places of power and profit were in the hands of the Whigs. Of these two parties, the Tories and Jacobites were the most numerous. They included a certain number of the ancient nobility, and comprehended a very large proportion of the landed interest, and, what gave them a prodigious influence in those days, a vast majority of parochial clergy. The strength of the Whigs lay in the great aristocracy, in the corporations, and in the trading and moneyed interests. The dissenters, who held popery in abhorrence, and dreaded the overbearing spirit of the church, were warmly attached to a government that protected their religious liberty, and, as far as it durst, extended to them every civil right." [See TORY.]

WHIP-POOR-WILL *(caprimulgus vociferus)*, in ornithology, a nocturnal bird of North America, which derives its name from its cry. When engaged in its nightly rambles it is seen to fly within a few feet of the surface of the earth, in quest of moths and other insects. During the day these birds retire into the darkest woods, where they pass the time in silence and repose, the weakness of their sight compelling them to avoid the glare of light.

WHIRL'POOL, a vortex or gulf where the water moves round in a circle. Sometimes when two opposite currents meet, especially in narrow channels, they turn upon a centre, and assume a spiral form, giving rise to eddies or whirlpools. Those in rivers are very common, from various accidents, and are usually very trivial, and of little consequence. In the sea they are more rare, but more dangerous. The most celebrated of these are the Euripus, near the island of Eubea, in the Grecian Archipelago; Charybdis, in the strait between Sicily and Italy; and the Maelstrom, off the coast of Norway.

WHIRL'WIND, an exceedingly rapid and impetuous wind that rises in a whirling direction, and continues in the same way for some time. Whirlwinds have both a progressive and a circular motion; they usually rise after calms and great heats, and mostly happen in the warmer latitudes. [See WIND, STORMS, &c.]

WHIS'KEY or WHIS'KY (a corruption of the Gaelic word *usquebaugh*), a well known spirituous liquor, distilled generally from barley, but sometimes from wheat or maize, as is the case in the United States.

WHIST, the most perfect game at the card table, requiring great attention and silence, whence its name. This game is played by four persons, who cut for partners; the two highest and the two lowest are together, and the partners sit opposite to each other: the person who cuts the lowest card is to deal first, giving one at a time to each person, till he comes to the last card, which is turned up for the trump, and remains on the table till each person has played a card. The person on the left hand side of the dealer plays first, and whoever wins the trick is to play again, thus going on till the cards are played out. The ace, king, queen, and knave of trumps are called *honours*; whichever side holds three of these honours, reckons two points towards the game, or for the whole of the honours, four points, the game consisting of ten points. The honours are reckoned after the tricks; all above six tricks reckoning also towards the game.——As an explanation of the technical words properly come within the scope of our work, we insert the following: *Finessing*, means endeavouring to gain an advantage thus: when a card is led, and you have the best and third best of that suit, you put your third best card upon that lead, and run the risk of your left-hand adversary having the second best; if he has not, which is 2 to 1 against him, you are then sure of gaining a trick. *Forcing*, means obliging your partner or adversary to trump a suit of which he has none. *Long trump*, means having one or more trumps in your hand, when all the rest are out. *Loose card*, is a card of no value, and, consequently, the most proper to throw away. *Points*, ten of them make a game; as many as are gained by tricks or honours, so many points are scored. *Quart*, is a sequence of any four cards, immediately following each other in the same suit. *Quart-major*, is a sequence of ace, king, queen, and knave. *Quint*, is a sequence of any five cards immediately following one another in the same suit. *Quint-major*, is a sequence of ace, king, queen, knave, and ten. *Reverse*, means only playing the hand in a different manner, that is, if you are strong in trumps, you play one away; if weak in trumps, you play the reverse, viz. another. *See-saw*, is when each partner trumps a suit, and plays those suits to one another, for that purpose. *Score*, is the number of points set up, ten of which make a game. *Slam*, is when either party wins every trick. *Tenace*, is having the first and third best cards and being last player, and consequently catching the adversary when that suit is played: as, for instance, in case you have ace and queen of any suit, your adversary leads, you must win those two tricks; and so of any other tenace of inferior cards. *Terce*, or tierce, is a sequence of any three cards immediately following one another in the same suit. *Terce-major*, is a sequence of ace, king, and queen.

WHITE, in chromatics, a colour which, according to Newton, is composed of all colours; those natural bodies only appearing white which reflect all the kinds of coloured rays alike.

WHITE-LEAD, a carbonate of lead much used in painting. It is prepared by exposing sheets of lead to the fumes of an

acid, and suspending them in the air until the surface becomes incrusted with a white coat, which is the substance in question.

WHITE-PRECIP'ITATE, in chemistry, carbonate of mercury.

WHITE-PYRI'TES, in mineralogy, an ore of a tin-white colour, passing into a deep yellow and steel gray, occurring in octahedral crystals, sometimes stalactitical and botryoidal. It contains 46 parts of iron and 54 of sulphur.

WHITESTONE, in geology, a species of rocks composed essentially of feldspar, but containing mica and other materials. It is sometimes termed *eurite*.

WHITE-SWEL'LING, in medicine, a chronic enlargement of the joints, without any alteration in the colour of the skin, sometimes hard, sometimes yielding to pressure, sometimes indolent, but usually painful.

WHI'TE-THORN, in botany, the hawthorn, a species of thorn, of the genus *Crataegus*.

WHITE-THROAT, in ornithology, the *Motacilla sylvia*, a small bird that frequents gardens and hedges.

WHITE-VIT'RIOL, in mineralogy, sulphate of zinc, a natural salt.

WHI'TEWASH, a composition of lime and water, used for whitening the plaster of walls and ceilings.

WHI'TING, in ichthyology *(gadus merlangus)*, a small and delicate fish, very abundant along the northern coasts of Europe. It makes its appearance in large shoals, and is taken by the line in great numbers.

WHIT'LOW, in surgery, *paronychia*, a swelling or inflammation about the nails or ends of the fingers, generally terminating in an abscess. Whitlows differ very much in their degree of violence, and in their depth and extent; and they are much more common in young healthy persons than in others.

WHIT'SUNTIDE, the fiftieth day after Easter, and which is properly called *Pentecost*. It is said to have received its popular name from the circumstance that, formerly, people newly baptized came to church between Easter and Pentecost in *white* garments.

WHYNN-DYKES, in mineralogy, dykes, banks, or natural walls of whin-stone, a peculiar species of basalt, found in various parts of the world, but nowhere on so grand and stupendous a scale as on the Scotch and Irish coasts.

WICK'LIFFITES, a religious sect which sprung up in England in the reign of Edward III. and took its name from John Wickliff, doctor and professor of divinity in the university of Oxford, who maintained that the substance of the sacramental bread and wine remained unaltered after consecration; and opposed the doctrine of purgatory, indulgences, auricular confession, the invocation of saints, and the worship of images. He made an English version of the Bible, and composed two volumes, called Alethein, that is, Truth, from which John Huss learned most of his doctrines. In short, to this reformer we owe the first hint of the reformation, which was effected about two hundred years after.

WIG'WAM, a name given by the English to the huts or cabins of the North American Indians.

WILL, that faculty of the mind by which we determine either to do or forbear an action. The will is directed or influenced by the judgment. The understanding or reason compares different objects, which operate as motives; the judgment determines which is preferable, and the *will* decides which to pursue. The freedom of the will is essential to moral action, and is the great distinction of man from the brute.

WILL OR TESTAMENT, the disposition of a person's estate, to take effect after his or her decease. After January, 1838, all wills made in England came under the provisions of a new act of parliament. By it, all property may be disposed of by will; all wills must be in *writing*, and each must be signed at the bottom or end by the testator, or, if he is unable, by some person on his behalf, by his direction, and in his presence; and two or more attesting witnesses (who must be present at the same time), must also sign the will. If the testator wishes to acknowledge or reward the attesting witnesses, he must do it in some other way than by bequeathing them anything; for legacies to attesting witnesses, or to the wife or husband of an attesting witness, are void. No person under twenty-one can make a valid will. Wills are revoked by subsequent marriage; otherwise a will can only be revoked by destruction, or by the making of a new one; and alterations in wills must be made in the same manner as a will is made. Wills are to be construed as if made immediately before the death of the testator, unless a contrary intention is expressed; and properties bequeathed in general terms include all property in the possession of the testator at his decease, whether acquired before or after the will was made.

WIL'LOW, in botany, a tree of the genus *Salix*, of which there are several species. The *weeping willow*, called *Salix Babylonica*, has long and slender branches, which droop and hang downward in graceful tresses. The willow was, in ancient days, especially among herdsmen and rustics, *a badge of mourning*, as may be collected from Virgil, in his Eclogues, where the nymphs and herdsmen are frequently introduced, sitting under a willow mourning their loves. The same occurs in many Greek poets. For the ancients frequently selected, and, as it were, appropriated several trees, as indexes or testimonials of the various passions of mankind. From them we continue, at this day, to use *rue* and *rosemary* at funerals; these two being representatives of a dead person, and *willow*, of *love*, *dead*, or *forsaken*. The Jews, upon their being led into captivity, (*Ps.* cxxxvii,) are said to hang their harps upon *willows*, *i. e.* trees appropriated to men in affliction and sorrow, who had lost their beloved Sion.

IN ROME, THE POWER OF MAKING WILLS DID NOT EXTEND TO PERSONS WHO WERE CONDEMNED TO PERPETUAL EXILE, OR TO STRANGERS.

WIL'LOW-HERB, in botany, the purple loosestrife, a plant of the genus *Lythrum*; and the yellow loosestrife, of the genus *Lysimachia*.

WINCHESTER BUSHEL, the original English standard measure of capacity, given by king Edgar, and kept in the town-hall of the ancient city of Winchester, with other measures both of quantity and length. Until the year 1826, when the imperial standard measure was introduced, the Winchester bushel was the standard for England.

WIND, a motion or sensible current of the air, or of the whole body of the atmosphere, or any part thereof, from one place to another. This motion, called wind, is occasioned by the rarefaction and condensation of the air. As it is a fluid, the natural state of air is rest, which it always endeavours to preserve, and if disturbed, to recover. When, therefore, this equilibrium is destroyed by rarefaction in particular places, the weightier air will rush in to restore it. These currents being often deflected by mountains and crossed by other currents; the different degrees of rarefaction by day, and condensation by night, ascent, and horizontal motion, keep the air in a state of constant activity. The rare superior parts appear, however, to be more sensible than the lower stratum, balloons having been carried upwards of sixty miles an hour, at the height of two miles, while the moderate wind below has not moved more than fifteen miles. In different countries the direction of the winds differs considerably according to the situation of the places where the observations have been made. In Great Britain the south-west is by far the most frequent wind. In April, May, and part of June, the east-wind is common, especially on the east coast of the island. In Ireland the south-west and west are the most prevalent. On the south coast of Europe the most frequent winds are the north, the north-east, and the north-west; and on the western coast the north-west prevails. [See TRADE WINDS, ATMOSPHERE, &c.]

WIND'BOUND, an epithet for a ship that cannot leave the port on account of unfavourable winds.

WIND'LASS, a common mechanical power, by which weights are raised, and water generally drawn out of a well. As power is as velocity, and as the hand at the winch makes a larger circle than the cylinder, round which the rope coils, so the power is proportionally increased. Thus, if the hand performs a circle of six feet, while the cylinder forms but one foot, the power of the hand, friction excepted, is increased six times.

WIND'MILL, a machine erected in elevated positions, and provided with vanes or sails, which are so placed as to be turned by the wind. In order that the wind may regulate the position of the mill, a large vane or weathercock is placed on the side which is opposite the sails, thus turning them always to the wind. But in large mills the motion is regulated by a small supplementary windwheel, or pair of sails, occupying the place of the vane. On account of the inconstant nature of the motion of the wind, it is necessary to have some provision for accommodating the resistance of the sails to the degree of violence with which the wind blows. This is generally done by clothing and unclothing the sails; that is, by covering, with canvas or thin boards, a greater or smaller portion of the frame of the sails, according to the force of the wind at different times. A method has been devised for producing the same effect, by altering the obliquity of the sails; and wind-mills have been so made as to regulate their own adjustment by the force of the wind.

WINE, a liquor drawn from vegetable bodies, and fermented; but more especially, the fermented juice of the fruit of the vine. *Wine* differs essentially from *spirit*, the former being *fermented*, and the latter *distilled*. From the definition here given, it will be evident that ale, cider, and other vegetable fermented liquors, are properly wines; though the term is, by custom, confined to liquors drawn from the grape. Wines are divided into two principal classes; *red* and *white*. *White wines* are of an amber colour, more or less deep; but so called, to distinguish them from the *red* wines, or *clarets*. The generality of white wines are made from white grapes; but some are from black ones, the skins of which are carefully kept from imparting their colour. On a chemical investigation, all wines consist chiefly of water and alcohol, besides some vegetable acid, the carbonic acid, tartar, and an astringent gummi-resinous matter, in which the colour of the red wine resides, and which is expressed from the husks of the grape. They differ from each other in the proportion of these ingredients, and particularly in that of alcohol, which they contain. Their qualities also depend upon circumstances attending the process of fermentation. The general effects of wine are, to stimulate the stomach, exhilarate the spirits, warm the habit, quicken the circulation, promote perspiration, and, when taken in large quantities, to prove intoxicating, and powerfully sedative. Among the Greeks and Romans, the sweet wines were those most commonly in use; and, in preparing their wines, the ancients often inspissated them until they became of the consistency of honey, or even thicker. These were diluted with water previously to their being drunk; and, indeed, the habit of mixing wine with water seems to have prevailed much more in antiquity than in modern times.—The great art in keeping wines is to prevent their fretting, which is done by keeping them in the same degree of heat. If wines are chilled, and of course turn foul, from being shipped and landed in cold weather, they will soon recover by putting them in a warm vault, well covered with saw-dust. If wines new landed are wanted soon for the bottle, it will be necessary to force them immediately, and let

WHEN THE VELOCITY OF THE WIND IS ONLY ONE MILE PER HOUR, IT IS SCARCELY PERCEPTIBLE; BUT BRISK AT TEN MILES, AND TEMPESTUOUS AT FIFTY.

WOOD MELLOWS THE FLAVOUR OF RAW SPIRITS, IT IS THEREFORE BETTER TO KEEP NEW SPIRIT IN WOOD THAN IN EARTHEN VESSELS.

them remain bunged close for at least a month, to recover from the forcing, or if two months the better; for wines bottled in high order come much sooner into drinking than if bottled when flat, which all wines are after forcing. Wine must never be bottled the least foul, which produces a tendency to fret; and, if bottled in this state, will never come in order. Attention should also be had to bottle in fine weather, when the wind is north; but to avoid cold or frosty weather. The months of April and October are favourable. The best time to bottle port wine is four years after the vintage, and to keep it two years in bottle before you begin to use it.——As an appropriate and useful conclusion to this article, we extract the following recipe for a *Family Wine*, by Dr. Ure: "Take black, red, and white currants, ripe cherries (black hearts are the best), and raspberries, of each an equal quantity. To 4 pounds of the mixed fruit, well bruised, put 1 gallon of clear soft water; steep three days and nights, in open vessels, frequently stirring up the magma; then strain through a hair sieve: press the residuary pulp to dryness, and add its juice to the former. In each gallon of the mixed liquors dissolve 3 pounds of good yellow muscovado sugar; let the solution stand three more days and nights, frequently skimming and stirring it up; then tun it into casks, which should remain full, and purging at the bung-hole, about two weeks. Lastly, to every 9 gallons, put 1 quart of good Cognac brandy (but not the drugged imitations made in London with grain whiskey), and bung down. If it does not soon become fine, a steeping of isinglass may be stirred into the liquid, in the proportion of about half an ounce to 9 gallons. The addition of an ounce of cream of tartar to each gallon of the fermentable liquor, improves the quality of the wine, and makes it resemble more nearly the produce of the grape."

WING, the limb of a bird, admirably constructed and covered with feathers for the purpose of aerial locomotion. The different bones of the wing are bound together, and connected with the bones of the body by strong ligaments; and the muscles by which motion is communicated to them are the most powerful with which a bird is provided. Altogether, the wing is a beautiful instance of mathematical exactness.——The wings of insects are membraneous, elastic, for the most part transparent, and traversed by firm air-vessels, which sometimes form a beautiful net-work.——*Wing*, in architecture, a side building, less than the main edifice.——In botany, the side petal of a papilionaceous corolla.——*Wings*, in military affairs, are the two flanks or extremes of an army, ranged in order of battle.——*Wings*, in fortification, denote the longer sides of horn-works, crown-works, tenailles, and other outworks, including the ramparts and parapets, with which they are bounded on the right and left from their gorge to their front.

WING'ED, in botany, a term applied to such stems of plants as are furnished all their length with a sort of membranaceous leaves, as the thistle, &c. *Winged leaves*, are such as consist of several little leaves, ranged in the same direction, so as to appear only as the same leaf. Such are the leaves of agrimony, acacia, ash, &c. *Winged seeds*, are such as have down or hairs on them, which, by the help of the wind, are carried to a distance.

WIN'TER one of the four seasons of the year, commencing on the day when the sun's distance from the zenith of the place is the greatest, and ending on that when it is at a mean between the greatest and the least. The coldness of winter is therefore owing to the shortness of the days, or time during which the sun is above the horizon, and the oblique direction in which his rays fall upon our part of the globe at that season.

WINTER-CHERRY, in botany, a plant of the genus *Physalis*, and its fruit, which is of the size of a cherry.

WI'RE-DRAWING, a very curious art, by which, by means of the power of steam, water, or other mechanical power, wire is drawn through orifices successively smaller. Wire may thus be drawn from an inch to the 1000th of an inch in diameter, and silver has been made the 1500th of an inch in diameter. One single grain of gold admits of being drawn out into a wire 98 yards long. That property of metals by which they submit to this operation without breaking, is called their *ductility*; the reverse, their *friability*. [See GOLD, GOLD-WIRE, &c.]

WIS'DOM, the right use of knowledge. It may be considered both as a *faculty* of the mind and as an *acquirement*. In the former sense it is the faculty of discerning or judging what is most just, proper, and useful: in the latter, the knowledge and use of what is best, most just, and most conducive to prosperity or happiness.—In Scripture theology, *wisdom* is the knowledge and fear of God, and sincere and uniform obedience to his commands: in other words, true religion.——*Wisdom of Solomon*, one of the books of the Apocrypha. It is by many thought to have been written after the cabalistic philosophy was introduced among the Jews.

WIS'TIT, in zoology, the striated monkey; a small species of monkey from South America, with an annulated tail.

WIT, in its original signification, was synonymous with wisdom. Thus we read of our ancient wittenagemot, or Saxon parliament, an assembly of wise men; and so late as the Elizabethan age, a man of great or pregnant wit, meant a man of vast judgment. The word wit, however, like many other words, has in the course of time undergone various mutations. According to Locke, wit lies in the assemblage of ideas, and putting those together with quickness and variety, so that a congruity of associations and pleasant images may be present to the fancy; while Pope defines it to be a quick conception and an easy delivery. It

SPIRITUOUS LIQUORS EXPAND BY HEAT; HENCE THEY ARE HEAVIER IN WINTER THAN DURING THE SUMMER.

is evident that wit excites in the mind an agreeable surprise, and that this is entirely owing to the strange assemblage of related ideas presented to the mind. Of so much consequence are surprise and novelty, that nothing is more vapid than a joke that has become stale by frequent repetition. For the same reason, a witty repartee is infinitely more pleasing than a witty attack; and a pun or happy allusion thrown out extempore in conversation, will often appear excellent, though it might be deemed execrable in print. Humour and wit are both addressed to the comic passion; but humour aims at the risibility, and wit at the admiration: humour is the seasoning of farce, and wit of comedy: humour judges by instinct; wit by comparison. As a learned divine has well observed, "sometimes it playeth in words and phrases, taking advantage from the ambiguity of their sense, or the affinity of their sound: sometimes it is wrapped in a dress of humorous expression: sometimes it lurketh under an odd similitude: sometimes it is lodged in a sly question, in a smart answer, in a quirkish reason, in a shrewd intimation, in cunningly diverting or cleverly retorting an objection: sometimes it is couched in a bold scheme of speech, in a tart irony, in a lusty hyperbole, in a startling metaphor, in a plausible reconciling of contradictions, or in acute nonsense. Often it consisteth in one knows not what, and springeth up one can hardly tell how." That species of wit which aims at the correction of manners—that higher kind which embodies the keenest satire in playful language, intended to probe but not to wound—has been appositely described in the following celebrated lines:—

"True wit is like the polished stone
Dug from Golconda's mine;
Which boasts two different powers in one,
To *cut* as well as *shine*."

But still, wit is a dangerous power; and wherever it becomes the *habitual* exercise of the mind, it is apt to impair the nobler powers of the understanding, to chill the feelings, to create a craving for evanescent excitement, and to break down those barriers which have been built up by courtesy, and form the strongest bulwarks of social and friendly intercourse.

WITCH'CRAFT, a supernatural power, which persons were formerly supposed to obtain the possession of, by entering into compact with the evil one. Indeed, it was fully believed that they gave themselves up to him body and soul; and he engaged that they should want for nothing, and be able to assume whatever shape they pleased, to visit and torment their enemies! The insane fancies of diseased minds, unusual phenomena of nature, and the artful machinery of designing malignity, ambition, or hypocrisy, were all laid at Satan's feet. Witchcraft was universally believed in throughout Europe till the 16th century, and even maintained its ground with tolerable firmness till the 17th. Vast numbers of reputed witches were convicted and condemned to be burnt. In short, it is recorded, that 500 witches were burned at Geneva in three months, about the year 1515; that 1000 were executed in one year in the diocese of Como; and it has been calculated that not less than 100,000 victims must have suffered, in Germany alone, from the date of Innocent's bull, in 1484, which directed the Inquisition to be vigilant in searching out and punishing witches, to the final extinction of the prosecutions. The number of those put to death in England has been estimated at about 30,000!

WITH'ERITE, in chemistry, a carbonate of barytes; first discovered by Dr. Withering. It is gray, white, or yellow.

WOAD, in botany, a plant of the genus *Isatis*, from which is extracted a drug that imparts a blue colour, and much used by dyers. It springs from seeds annually sown in the spring, and is grown in France and on the coasts of the Baltic.——The ancient Britons are said to have tinctured their bodies with the dye procured from this plant.——*Woad-mill*, a mill for bruising and preparing woad.

WODA'NIUM, a metal of a bronze yellow colour, found in a species of pyrites, in Hungary, which had been supposed to be an ore of cobalt.

WOLF *(canis lupus)*, in zoology, an animal allied to the dog tribe; a beast of prey, that kills sheep and other domestic animals. It is very fierce, and, when pressed with hunger, will enter houses and even devour children.—The wolf was at one time a very destructive native of this country, and all possible means were adopted to rid it of so rapacious a despoiler. King Edgar attempted to effect it in England, by remitting the punishment of certain crimes on producing a certain number of wolves' tongues: and in Wales, the tax of gold and silver was commuted for an annual tribute of their heads. Some centuries after, they had, however, increased so numerously as once more to become an object of royal attention, and great rewards were again offered for their destruction. Edward I. issued his royal mandate to Peter Corbet, to superintend and assist in the destruction of them in the several counties of Gloucester, Worcester, Hereford, Salop, and Stafford. In other counties, certain persons held their lands upon condition of hunting, taking, and destroying a number of wolves annually, in proportion to the quantity of land so held. They were so numerous in Scotland about the middle of the 15th century, that they completely overran the country, to the destruction of the flocks, and immense losses to the community; nor were they, with every exertion of the natives, totally extirpated till the year 1680, when the last wolf is recorded to have fallen by the hand of the famous Sir Ewen Cameron. Ireland in those times suffered by their immense numbers in an equal degree with England, Scotland, and Wales; and she suffered for a much longer time, as they were not per-

fectly annihilated in that country till the early part of the last century.

WOLF'-FISH, in ichthyology, the *Lupus marinus*, a fierce and voracious fish of the northern seas.

WOL'FRAM, in mineralogy, is the native tungstate of iron and manganese, which occurs in primitive formations, along with the ores of tin, antimony, and lead, in North America, Bohemia, Switzerland, Cornwall, &c. Tungsten and tungstic acid are obtained from it.

WOL'VERIN, or WOL'VERENE (*ursus gulo*), in zoology, a quadruped of North America: a variety of the glutton.

WOM'AN, the female of the human race, grown to an adult age. In the patriarchal ages women were used agreeably to that simplicity of manners which for a long time after pervaded all nations. They drew water, kept sheep, and fed the cattle; as may be observed in what is related of Rebecca, the niece of Abraham, and Rachel, the daughter of Laban. Among the Greeks and Romans, women were employed in spinning, weaving, embroidery, and all sorts of needle-work; their education being wholly confined to their domestic duties. It is in the Christian home only that woman reigns—the mother, sister, wife, and friend. The influence of Christianity gave woman a new station in society, broke her chains, and released her from the degrading restrictions in which she had almost become the soulless thing which she had been represented to be. As man ceased to be a mere citizen of his own country, and felt himself to be a citizen of the world, so woman was restored to her natural rights. "In every age and country (says Gibbon), the wiser, or at least the stronger, of the two sexes has usurped the powers of the state, and confined the other to the cares and pleasures of domestic life. In hereditary monarchies, however, and especially in those of modern Europe, the gallant spirit of chivalry, and the law of succession, have accustomed us to allow a singular exception; and a woman is often acknowledged the absolute sovereign of a great kingdom, in which she would be deemed incapable of exercising the smallest employment, civil or military. But as the Roman emperors were still considered as the generals and magistrates of the republic, their wives' mothers, although distinguished by the name of Augusta, were never associated to their personal honours; and a female reign would have appeared an inexpiable prodigy in the eyes of those primitive Romans who married without love, or loved without delicacy and respect."—Born to feel and inspire the kind and tender affections, it is the fault of men if well-educated females become not the grace and ornament of society. This, at least, is the rule; the reverse of this, the exception. In our treatment of the sex, there is a just medium to be observed—as far removed from their humiliation, as it is from that extravagant homage which stops at nothing short of their deification. Woman is the equal and companion of man—not the plaything of his caprice, nor the slave of his passions. When unpolluted by the breath of sensuality, and unattacked by the more insidious venom of seductive adulation, if in youth her mind has been properly directed, her character will stand forth in all the majesty of native dignity, in all the grace of virtuous simplicity. With such a being pictured to his imagination, well might the poet exclaim,

"Oh she is all that soul can be,
One deep, undying sympathy!"

WON'DER, that emotion which is excited by something presented to the senses which is either sudden, extraordinary, or not well understood. The word *wonder* is nearly allied to *astonishment*, though it expresses less, and much less than *amazement*.——Among the ancients, *the seven wonders of the world* were—the Egyptian pyramids—the mausoleums erected by Artemisia—the temple of Diana, at Ephesus—the walls and hanging gardens of Babylon—the colossus at Rhodes—the statue of Jupiter Olympus—and the Pharos or watch-tower at Alexandria.

WOOD, the hard and fibrous substance of trees, consisting of the heart-wood in the centre, and the sap-wood on the outside, in which the concentric circles determine the age of the tree. [For the growth, structure, and properties of wood, we refer to BOTANY, PLANTS, &c.]——*Petrified wood.* Wood, in ordinary circumstances, whether upon the surface of the earth, or buried under it, is gradually decomposed by the concurrent action of air and water; its texture is broken down, the connexion between its several vegetable principles of which it consists is dissolved, its ingredients enter into new combinations, and no vestige remains either of its organization or chemical properties. Sometimes, however, it happens that the external figure and internal arrangements are preserved, while the chemical properties have undergone very remarkable alterations; in consequence of which the natural decay is prodigiously retarded, and often nearly wholly suspended. Wood that has undergone this change is said to be *petrified*. There are three substances by which this change may be brought about; namely, pyrites, oxyde of iron, and siliceous earth in the form of agate or horn-stone. These constitute so many species of petrified wood. The *pyritous fossil wood* occurs principally in the independent coal formation: it is composed entirely of common pyrites, often in a state of semi-decomposition; it appears to contain no ligneous particles, but retains with considerable exactness the external figure, and, in some degree, the internal organization of wood. The reason why this species presents a less striking resemblance to wood than the others do, is probably the strong crystaline polarity which pyrites possesses: in splitting longitudinally a piece of pyritized wood, it not unfrequently happens, that the fibres

THE ATHENIANS AND ROMANS KEPT THEIR WOMEN UNDER GREAT RESTRAINT, BUT THE LACEDEMONIAN VIRGINS WENT OUT WITHOUT VEILS.

representing the concentric layers of wood are composed of minute cubes laterally aggregated to each other. The *ferruginous fossil wood* is found in hematite, and especially in argillaceous iron ore. Externally it presents the appearance of trunks and branches, and its internal texture has a close resemblance to that of wood. In its chemical composition it does not appear to differ materially from common argillaceous iron ore. But *agatized wood* is that which has been the most examined: It has been made a distinct mineral species by Werner, who has given it the name of holzstein, or woodstone, of which the following are the characters. Its colour is ash-gray, passing into grayish-black, yellowish, brownish, and blood-red: the colours run into each other, forming clouds and stripes in a longitudinal direction. It occurs in the varied form of trunks, branches, and roots; and presents in the utmost perfection the internal organization of wood, not only the longitudinal fibres and concentric layers being visible, but even the knots and medullary processes. Its internal lustre is various, being between glistening and dull. Its cross fracture is imperfectly conchoidal; its longitudinal fracture, splintery and fibrous. It is moderately translucent; is harder than glass, and gives fire with steel, but is easily frangible. It occurs in sand and sand-stone in various countries, especially in the hill St. Symphorien, near Etampes, in France; in Saxony, Bohemia, and Hungary; near Loch Neagh, in Ireland; in the beds of sandstone that lie above the fuller's earth, near Woburn, in Bedfordshire; and also in the sandy deserts of Egypt.——*Chemical properties of Wood:* Wood becomes snow-white, when exposed to the action of chlorine; digested with sulphuric acid, it is transformed first into gum, and, by ebullition with water, afterwards into grape-sugar; with concentrated nitric acid, it grows yellow, loses its coherence, falls into a pulverulent mass, but eventually dissolves, and is converted into oxalic acid; with strong caustic alkaline lyes, in a hot state, it swells up excessively, dissolves into a homogeneous liquid, and changes into a blackish brown mass, containing oxalic and acetic acids.——*Bread from Wood!* It has been clearly proved that all the chief alimentary matters employed by man may be reduced to three classes:—viz. saccharine, oily, and albuminous substances, the most perfect specimens of which are respectively sugar, butter, and white of egg. The saccharine principle, in its extended sense, includes all those substances which are chiefly derived from the vegetable kingdom; it means, in fact, the same thing as what we commonly call vegetable diet. It comprehends all those substances, whatever their sensible properties may be, into the composition of which hydrogen and oxygen enter in the proportion in which they form water; for example, the fibre of wood, which chemists call *lignin*. Much skilful manipulation and delicacy of experiment were required to establish this result; that the nutritive property of the woody fibre was convertible into a farinaceous powder—in short, that a tolerably good quartern loaf can be made out of a deal-board; but this has been proved by the recent labours of a German professor, and may be verified by any one who will take the trouble to repeat them. The following, says Dr. Prout, was the method he employed for this purpose: in the first place, everything that was soluble in water was removed by maceration and boiling; the wood was then reduced to a minute state of division, not merely into fine fibres, but actual powder, and after being repeatedly subjected to the heat of an oven, was ground in the usual manner of corn. Wood thus prepared, according to the author, acquires the smell and taste of corn flour. It is, however, never quite white, but always of a yellowish colour. It also agrees with corn flour in this respect, that it does not ferment without the addition of leaven, and in this case sour leaven of corn flour is found to answer best. With this it makes a perfectly uniform and spongy bread; and when it is thoroughly baked, and has much crust, it has a much better taste than what, in times of scarcity, is prepared from bran and husks of corn. Wood flour also, boiled in water, forms a thick, tough, trembling jelly, like that of wheat starch, and which is very nutritious. The nutritious properties were first tried on a young dog; afterwards he fed two pigs upon it; and then, taking courage from the success of the experiment, the professor attacked it himself. His family party, he says, ate it in the form of gruel or soup, dumplings, and pancakes, all made with as little of any other ingredient as possible; and they found them palatable and quite wholesome.——The learned professor does not tell us how many deal boards it takes to make a quartern loaf, nor how much time and labour are required to knead the ligneous mass; and, we must confess, it is not *our* business to enquire. It is sufficient, in a scientific point of view, to know, that the above-described property exists in wood. But it brings to our recollection a circumstance that came under our notice during a season of scarcity in the early part of the late war, which, with the reader's permission, we will relate. The exorbitant price of provisions generally, but particularly of bread, had rendered it a moral duty on the part of every one to observe, not merely the strictest frugality in their house-keeping expenses, but to substitute other food, as far as was possible, for this prime necessary of life. A praiseworthy energy was displayed by the upper and middling classes in supplying the poor with soup, potatoes, &c.; and, indeed, the various benevolent plans which were at that time adopted for their relief, were laudable, wise, and provident. To their honour be it spoken, the clergy were foremost in this work of charity; and the zeal of a certain worthy dig-

nitary of the church, whom we well knew, induced him to recommend from the pulpit the general adoption of *bran puddings*; adding, that as he had them regularly served up at his own table, he could vouch for their being both nutritious and palatable. But, alas! it would seem that the benevolent divine—for such he really was—knew little of the economy of his own *cuisine*. Some wag, suspecting the doctor had been duped, feed his cook: and the important secret was blazoned forth—that a dozen eggs, with a proportionate quantity of milk, sugar, spices, and a dash of brandy, added to a table-spoonful of *bran*, would make a very nutritious and palatable pudding!

WOOD'COCK, in ornithology, a fowl of the genus *Scopolax*, inhabiting the northern parts of the European continent in summer, but frequenting England in winter.

WOOD'COCK-SHELL, in conchology, a name given to a peculiar kind of the *purpura*, called by the French *becasse*. There are two species, the smooth and the prickly.

WOOD-ENGRAVING, or wood-cutting, the art of cutting figures in wood, that they may be printed by the same process as common letter-press. The mode of engraving on wood is exactly the reverse of that of copper-plate, the parts intended to appear being raised on the surface. The wood which is used for the purpose of engraving, is that of the box-tree, of which a considerable quantity is imported from Turkey. The design drawn upon the wood is the reverse of the object copied, so that when the impression is taken from the engraving, the object is correctly represented.

WOOD'PECKER (*picus*), in ornithology, a bird noted for its clinging to the trunks of trees, and holding its body upright, while it strikes or pecks holes in the bark, in search of insects which are sheltered in the crevices. There are many varieties; and the plumage of all of them is composed of the most striking colours.

WOOD'-PIGEON (*Columba palumbus*), in ornithology, the ring-dove. [See PIGEON.]

WOOD-PU'CERON, in entomology, a small insect of the puceron kind, which penetrates into the wood. It is of a grayish colour, having two hollow horns on the hinder part of its body.

WOOD'-GELD, in our ancient customs, the gathering or cutting of wood within the forest; or the money paid for the same to the foresters. Sometimes it also seems to signify an immunity from this payment by the king's grant.

WOOD'STONE, in mineralogy, a blackish gray siliceous stone, a subspecies of horn-stone.

WOOF, the cross threads in weaving, introduced by the shuttle, when part of the warp is raised.

WOOL, the fleecy coat of the sheep, which in fineness sometimes approaches fur. Wool, like the hair of horses, cattle, and most animals, completes its growth in a year, and then falls off as hair does, and is succeeded by a fresh crop. It differs from hair, however, in the uniformity of its growth, and the regularity of its shedding. Hairs are commonly of the same thickness in every part; but wool constantly varies in thickness in different parts, being generally thicker at the points than at the roots. While the wool yet remains in the state it was first shorn off the sheep's back, and not sorted into its different kinds, it is called a *fleece*. The wool of the same animal differs much on the various parts of the body; that on the back and the sides being the best. The great difference in the wool of different sheep depends, in general, upon their descent, the crossing of breeds, climate, food, age, manner of living, and other circumstances. Some of the most scientific "wool-growers" maintain, that the degree of softness (the most valuable quality in wool) depends principally on the nature of the soil on which sheep are fed; that sheep pastured on chalky districts, or light calcareous soil, usually produce hard wool; while the wool of those that are pastured on rich, loamy, argillaceous soils, is always distinguished by its superior softness. Wool, either in a raw or a manufactured state, has always been the principal of the staple articles of this country. The price of wool was, in very early times, much higher, in proportion to the wages of labour, the rent of land, and the price of butcher's meat, than at present. It was, before the time of Edward III. always exported raw, the art of working it into cloth and dyeing being so imperfectly known, that no persons above the degree of working people could go dressed in cloth of English manufacture. The first step taken to encourage the manufacture of woollen cloths was by Edward III., who procured some good workmen from the Netherlands, by means of protection and encouragement. The value of wool was considered so essentially solid, that taxes were vested in that commodity, reckoning by the number of sacks; and in proportion to the price of the necessaries of life, and value of silver, wool was at least three times dearer than it is now. The manufacturing of cloth being once introduced into the country, the policy of preventing the exportation of the raw material was soon evident; and the first act was that of Henry IV. c. 2, by which the exportation of sheep, lambs, or rams was forbidden, under very heavy penalties. From 1660 down to 1825, the export of wool was strictly prohibited: and an idea being generally entertained, that the wool of England was superior to that of every other country, it needed no argument to convince those who were interested in this staple article, that if we succeeded in keeping the raw material at home, we should infallibly command the market of the world for our woollen manufactures. Innumerable statutes were in consequence passed,—the enactments in some of which were the most arbitrary and severe that can be imagined,—to prevent the clandestine exportation of wool; and thus it con-

UNTIL THE INTRODUCTION OF SAXONY WOOL, DURING THE FRENCH REVOLUTIONARY WAR, EUROPE WAS DEPENDENT ON SPAIN FOR ITS SUPPLY.

A PERSON ENVELOPED IN A LOOSE WOOL DRESS MAY REMAIN SEVERAL MINUTES IN AN OVEN HEATED MANY DEGREES ABOVE THAT OF BOILING WATER.

IF A WORM BE CUT INTO THREE PIECES, THE MIDDLE REPRODUCES A PERFECT HEAD AND TAIL; THE ENDS WILL ALSO BECOME PERFECT WORMS.

tinued till 1825, when Mr. Huskisson procured the abolition of this long-cherished policy. Wool in the state in which it is taken from the sheep, is always mixed with a great deal of dirt and foulness of different kinds; and, in particular, is imbued with a strong smelling grease. These impurities are got rid of by washing, fulling, and combing, by which the wool is rendered remarkably white, soft, clean, light, and springy under the hand. When boiled in water for several hours, in a common vessel, wool is not in any way altered in weight and texture, nor does the water acquire any sensible impregnation.

WOOL'LEN MAN'UFACTURE. There are two sorts of wool which afford the basis of different fabrics, the *long* wool, in which the fibres are rendered parallel by the process of combing; and the *short* wool, prepared by carding, like cotton, which is used in different degrees of fineness, for broad-cloths, flannels, &c. The wool of which good broad-cloth is made, should be not only shorter, but, generally speaking, finer and softer than the worsted wools, in order to fit them for the fulling process. The best English short native fleeces, such as the fine Norfolk and Southdown, are generally divided by the wool-sorter into the following sorts, all varying in fineness from each other:—viz. 1. Prime; 2. Choice; 3. Super; 4. Head; 5. Downrights; 6. Seconds; 7. Fine Abb; 8. Coarse Abb; 9. Livery; 10. Short coarse, or breech wool.—In articles which are made of long wool, the texture is complete when the stuff issues from the loom. The pieces are subsequently dyed, and a gloss is communicated to them by pressing them between heated metallic surfaces. But in cloths made of short wool, the web, when taken from the loom, is loose and open, and requires to be submitted to the operation of *fulling*, by which the fibres are made to *felt*, and combine more closely. By this process the cloth is reduced in its dimensions, and the beauty and stability of the texture are greatly improved. The nap or downy surface of broad-cloths is raised by a process, which, while it improves the beauty, tends somewhat to diminish the strength of the texture. It is produced by carding the cloth with a species of burrs, the fruit of the common teasel (*dipsacus fullonum*), which is cultivated for the purpose. This operation extricates a part of the fibres, and lays them in a parallel direction. The nap, composed of these fibres, is then cut off to an even surface, by the process of *shearing*. This is performed in various ways; but, in one of the most common methods, a large spiral blade revolves rapidly in contact with another blade, while the cloth is stretched over a bed, or support, just near enough for the projecting filaments to be cut off at a uniform length, while the main texture remains uninjured. *Pressing* is the last finish of cloth to give it a smooth level surface. The piece is folded backwards and forwards in yard lengths, so as to form a thick package on the board of a screw or hydraulic press. Between every fold sheets of glazed paper are placed, to prevent the contiguous surfaces of cloth from coming into contact; and with the assistance of hot iron plates, carefully arranged, and by severe compression, the cloth receives a smooth and glossy appearance.

WOOL'SACK, a name for the seat of the lord chancellor in the House of Lords.

WORDS, are signs, or symbols of ideas and thoughts, produced by sounds, and combinations of sounds, or by letters and their combinations.——In the language of an old writer, who somewhat quaintly expresses himself, "He that has names without ideas, wants meaning in his words, and speaks only empty sounds. He that has complex ideas without names for them, wants dispatch in his expression. He that uses his words loosely and unsteadily, will either not be minded or not understood. He that applies names to ideas, different from the common use, wants propriety in his language, and speaks gibberish; and he that has ideas of substances disagreeing with the real existence of things, so far wants the materials of true knowledge." [See LANGUAGE.]

WORLD, the whole system of created globes; or the orbs which occupy space, and all the beings which inhabit them. The duration of the world is a subject which hat given rise to much disputation. Plato, after Ocellus Lucanus, held it to be eternal, and to have flowed from God as rays flow from the sun. Aristotle, who was much of the same opinion, asserts that the world was not generated so as to begin to be a world, which before was none: he lays down a pre-existing and eternal matter as a principle, and thence argues the world eternal. His arguments amount to this, that it is impossible an eternal agent, having an eternal passive subject, should continue long without action; and his opinion was for a long time generally followed, as seeming to be the fittest to end the dispute among so many sects about the first cause. But some of the modern philosophers refute the imaginary eternity of the world by this argument, that if it be *ab eterno*, there must have been a generation of individuals in a continual succession from all eternity, since no cause can be assigned why they should not be generated, viz. one from another. [See UNIVERSE.]——By the *world* we sometimes understand the things of this world, its pleasures and interests. It also means the customs and manners of mankind; the practice of life.

WORM, in a popular sense, any small cylindrical animal, or reptile, including a great variety of different classes and orders: for which see the article "ZOOLOGY," class *Vermes*.——*Worm*, in laboratories and distilleries, a spiral leaden pipe placed in a tub of water, through which the vapour passes in distillation, and in which it is cooled and condensed.——In gunnery, a screw of iron, to be fixed on the end of a rammer, to pull out the wad of a cannon, firelock, or pistol.

WORM'ING, an operation performed on puppies, under an ignorant supposition that it prevents their going mad; but in reality to cure them, as it generally does, of the disposition to gnaw everything in their way. It consists in the removal of a small worm-like ligament, situated beneath the tongue; and the part being afterwards sore for some days, the animal is thus weaned of his mischievous habits.

WORM'WOOD *(artemisia)*, in botany, a genus of plants, of which the common and well-known species is the *artemisia absinthium*, used in medicine as a tonic and anthelmintic. The seed is used by the rectifiers of British spirits, and the plant is a good deal cultivated in certain parts of England for that purpose.

WOR'SHIP, or DIVI'NE WOR'SHIP, the act of paying divine honours to the Supreme Being; or, the reverence and homage offered up to God in prayer, adoration, and other devotional exercises, expressive of pious veneration. If the worship of God, says Paley, be a duty of religion, public worship is a necessary institution; because without it the greater part of mankind would exercise no religious worship at all.

WORS'TED, a kind of thread or yarn spun of wool that has been combed, and which, in the spinning, is twisted harder than ordinary. It is chiefly used either to be knit or woven into stockings, caps, &c.

WOULFE'S APPARA'TUS, a very important and useful apparatus for chemical purposes, whose invention forms almost an era in the science. Before it was known, the only vessels that chemists employed for distillations were either the alembic with its refrigeratory, or the retort with its receiver. The former was devoted almost exclusively to the distillation of those fluids which are readily condensed by cooling, and are not attended with the production of much permanently elastic vapour, or such as was not easily condensable, such as water impregnated with the aromatic parts of vegetables, alcohol, &c.; whilst the retort, with its glass receiver, was reserved for the distillation of the stronger acids, and other substances accompanied by much uncondensable vapour. Here a great inconvenience subsisted, for either enormously large receivers were required, or a considerable number of them with double openings, like aludels; or else it was necessary to avoid the rupture of the vessels by having a small hole, which could be opened occasionally, when the quantity of confined vapour was judged to be too great. In experiments of research, too, the old apparatus was peculiarly defective, as the gaseous products, which are often by far the most interesting, were entirely lost. The essential parts of Woulfe's apparatus are, a retort or any other vessel in which the materials are heated; a receiver to detain that part of the product which is condensable by mere cooling; and a bent tube proceeding from the receiver to the bottom of a bottle placed by its side, and full, or nearly so, with water or any other liquid. If more than one bottle be employed, these are ranged side by side, and connected with each other by bent tubes, each of which proceeds from the top of the bottle immediately preceding, and plunges into the bottom of the liquid of the bottle next in order. Every part of the apparatus is air-tight except the end farthest from the retort, so that every particle of vapour or gas has to traverse the whole series of vessels, and to pass through the liquid in every one of the bottles, before it escapes into the air; and thus, if at all condensable by the liquid used, can hardly escape condensation. There are various modes by which Woulfe's apparatus has been improved; but, we trust, we have said as much as is necessary to describe the principle. It is worthy of observation, however, that this admirable apparatus, which was given to the public as the entire invention of Mr. Woulfe, was actually drawn and described by Glauber, considerably more than a century before.

WOU'RALI POI'SON, a composition prepared and used by a tribe of Indians, the effects of which, as described by Waterton, the South American traveller, are truly extraordinary. A day or two before the Macoushi Indian prepares his poison, he goes into the forest in quest of the ingredients. A vine grows in these wilds which is called *wourali*, and it is from this that the poison takes its name, and it is the principal ingredient. When he has procured enough of this, he digs up a root of a very bitter taste, ties them together, and then looks about for two kinds of bulbous plants, which contain a green and glutinous juice. He fills a little vessel, which he carries on his back, with the stalks of these, and lastly ranges up and down till he finds two species of ants; one of them is very large and black, and so venomous, that its sting produces a fever; the other is a little red ant, which stings like a nettle. To these are added a quantity of the strongest pepper, with the pounded fangs of the Labarri and Connacouchi snakes; which he usually has in store; for when he kills a snake, he generally extracts the fangs, and keeps them by him. Having thus found the necessary ingredients, he scrapes the wourali vine and bitter root into thin shavings, and puts them into a kind of colander made of leaves; this he holds over an earthen pot, and puts water on the shavings; the liquor which comes through has the appearance of coffee. When a sufficient quantity has been procured, the shavings are thrown aside. He then bruises the bulbous stalks, and squeezes a proportionate quantity of their juice through his hands into the pot. Lastly, the snake's fangs, ants, and pepper, are bruised and thrown into it. It is then placed on a slow fire, and as it boils, more of the juice of the wourali is added, according as it may be found necessary, till it is reduced to a thick scum of a deep brown colour, when a few arrows are poisoned

with it to try its strength. If it answers the expectations, it is poured out into a calabash, which is carefully covered over with a couple of leaves, and over them a piece of deer's skin is tied. They keep it in the dry, and occasionally suspend it over the fire to counteract the effects of any dampness it may have imbibed. This poison has the most powerful action on animal life; but it destroys life so gently, that the victim appears to feel no pain whatever.

WRACK, in botany, the *Fucus vesiculosus* of Linnæus, a marine plant which is of great utility as a manure. This plant is found on rocks left dry at low water: the stalk runs along the middle of the leaf, and is terminated by watery bladders. It is sometimes called *sea-oak* and *sea-tangle*.

WRAN'GLER, Senior, in the university of Cambridge, the student who passes the best examination (especially in mathematical knowledge) in the senate-house, for the first degree, or that of bachelor in arts; they who follow next in the same division are respectively termed *second, third, fourth*, &c. *wranglers*.

WRASS, or WRASSE *(labrus tinca)*, in ichthyology, a fish called also the *sea-tench*, and sometimes *old-wife*. It resembles the carp in figure, and is covered with large scales.

WRECK, in navigation, the destruction of a ship and the cargo, by being driven ashore, or found floating at sea in a deserted and unmanageable condition. But in order to constitute a legal wreck, the goods must come to land. In former times the most inhospitable and barbarous conduct was exercised against all who had the misfortune to suffer from the perils of the sea; but as commerce and navigation were extended, the law was made to afford the adventurous mariner protection. In England, as in other countries, wrecks had been adjudged to the king: but the rigour and injustice of this law was modified so early as the reign of Henry I., when it was ruled, that if any person escaped alive out of the ship, it should be no wreck. And after various modifications, it was decided, in the reign of Henry III. that if goods were cast on shore, having any marks by which they could be identified, they were to revert to the owners, if claimed any time within a year and a day. The plundering of wrecks had, however, become so confirmed by the custom of ages, that various subsequent penal statutes were enacted to repress it; and even so lately as the reign of George II. it was found necessary to pass a new statute (26 Geo. II. c. 19.), the preamble of which is as follows:—"Whereas notwithstanding the good and salutary laws now in being against plundering and destroying vessels in distress, and against taking away shipwrecked, lost, or stranded goods, many wicked enormities have been committed, to the disgrace of the nation, and the grievous damage of merchants and mariners of our own and other countries, be it enacted," &c.; the enactment being for the preventing of the escape of any person endeavouring to save his life, or wounding him with intent to destroy him, or putting out false lights in order to bring any vessel in danger, each of which is made capital felony. By the same statute, the pilfering of any goods cast ashore is made petty larceny.

WREN, in ornithology, the chesnut-coloured *motacilla*, with the wings variegated with white and gray. This is a very minute bird, and, except the golden-crowned wren, the smallest of any in Europe: the head is large and round, the eyes dark, and the beak slender and brown; the tail is short, and generally carried erect; the head, neck, and back are of a dusky chesnut-brown; the breast is of a dusky white, and the lower part of it is variegated with obscure and transverse lines of black. It is fond of prying about crevices and holes in walls, and is constantly in motion, searching for insects, which form its principal food.——The *golden-crowned wren* is distinguished by an orange crown; its length is 4½ inches, and its weight under 80 grains. It builds its nest, which is a remarkably neat piece of workmanship, on the oak, yew, or some species of the pine. It is most commonly open at the top, but sometimes covered with a dome, and has an opening on one side. It is always ingeniously suspended beneath the branch, like those of many tropical birds, being the only instance of the kind amongst those of Great Britain. The eggs are about ten in number, and are small, round, and white. In a still and sultry noon, when not a leaf is stirring, and almost every other bird has retired from the heat of the sun into the shadiest thickets, the little solitary golden-crowned wren is to be seen flitting noiselessly from spray to spray, in search of its food, paying no attention to any one who happens to be watching it, and never for a moment remaining in a state of rest. The lightness and airiness of its motions, as it hops and flutters about upon the smallest twigs, are unrivalled; and in shape and plumage it is also superior to most of the feathered inhabitants of our groves and gardens. Its song is very soft and low—a mere whisper—and therefore quite in keeping with its tiny and delicate form.

WRESTLING, a kind of combat or engagement between two persons unarmed, body to body, to prove their strength and dexterity, and try which can throw his opponent on the ground. Wrestling is an exercise of very great antiquity and fame. It was in use in the heroic age; and had considerable rewards and honours assigned to it at the Olympic games. We learn from Stow, that the citizens of London formerly wrestled on St. Bartholomew's day before the lord mayor and aldermen, who rode out of town on horseback to witness the sport. But the wrestlers of Cornwall and Devon seem to have always been most celebrated among the English athletæ.

WRIST (*carpus*), in anatomy, the joint by which the hand is united to the arm. It is composed of eight small bones in two

rows, the motions of which on the fore-arm may be described as those of flexion, extension, abduction, and circumduction.——In the manege, the *bridle-wrist* is that of the left-hand. A horseman's wrist and his elbow should be equally raised; and the wrist should be two or three fingers above the pommel of the saddle.

WRIT, in law, a precept issued by some court or magistrate in the name of the government, and addressed to a sheriff, his deputy, or other subordinate executive officer, commanding him to do some particular thing. Writs are distinguished into *original* and *judicial*, the former being such as a party sues out without any direction of the court in the particular case; the latter, such as are issued in pursuance of a decree, judgment, or order of a court. A writ, or summons, is called a *subpœna*, when it requires witnesses to appear; a *latitat*, when it is assumed the party is concealed; of *habeas corpus*, when it is to bring up the body; of *premunire*, when it incurs forfeiture of all property; and of *qui tam*, when to recover a fine, of which the prosecutor is to have a share.——These and many others will be found in their respective places in this work.

WRITER TO THE SIGNET, a Scottish attorney at law, but under stricter regulation than English attorneys. *Writers, or Clerks to the Signet*, as they are also called, are chiefly employed in civil trials before the court of session: they likewise prepare the warrants of all charters of lands flowing from the crown; all summonses for citing parties to appear in the court of session; all diligences of the law for affecting the person or estate of a debtor, or for compelling implement of the decrees of the supreme court.——*Writer of the Tallies*, an officer of the English exchequer; a clerk to the auditor of the receipt, who writes upon the tallies the whole of these tellers' bills.

WRITING, the art and act of expressing and conveying our ideas to others by letters or characters visible to the eye. Without its aid the experience of each generation would have been almost entirely lost to succeeding ages, and only a faint glimmer of truth could have been discerned through the mists of tradition. The most ancient remains of writing, which have been transmitted to us, are upon hard substances, such as stones and metals, which were used for edicts and matters of public notoriety. Thus we read that the decalogue was written on two tables of stone; but this practice was not peculiar to the Jews, for it was used by most of the Eastern nations, as well as by the Greeks and Romans. The laws penal, civil, and ceremonial, among the Greeks, were engraven on tables of brass, called *cyrbes*. The Chinese, before the invention of paper, wrote or engraved with an iron tool, or style, upon thin boards or on bamboo. Pliny says, that table-books of wood were in use before the time of Homer. In later times these tables were usually waxed over, and written upon with a style. What was written upon the tables which were thus waxed over was easily effaced, and by smoothing the wax new matter might be substituted in the place of what was written before. The bark of trees was also used for writing by the ancients, and is so still in several parts of Asia. The same may be said of the leaves of trees. But the Greeks and Romans continued the use of waxed table-books long after the use of papyrus, leaves, and skins became common, because they were so convenient for correcting extemporary compositions. [See PAPER, PAPYRUS, &c.] ——Where writings have been effaced for fraudulent purposes with muriatic acid, sulphuret of ammonia and prussiate of potash will revive the writing, and discover the artifice. Very old writing may be revived in this way. If indigo and oxyde of manganese be added to common ink, it will prevent its being effaced by oxymuriatic acid.

WYV'ERN, in heraldry, a kind of flying serpent, an imaginary animal, occasionally represented in coats of arms.

X.

X, the twenty-fourth letter of the English alphabet, is borrowed from the Greek. When used at the beginning of a word, it has precisely the sound of *z*, but in the middle and at the end of words, its sound is the same as *ks*; as, *wax, luxury, taxation*, &c. In French, *x* has the various pronunciations of *s*, *ss*, *gz*, and *z*, according to circumstances. The Italians never use it, on account of its guttural character, but express it by *ss*, as in *Alessandro*; and the Germans generally substitute for it *ks*, *gs*, or *chs*. X begins no word in our language but such as are of Greek original; and is in few others but what are of Latin derivation. As a numeral, X stands for ten. When laid horizontally, thus ⋈, it stands for a thousand, and with a dash over it, ten thousand. As an abbreviation, X stands for *Christ*, as in Xn., *Christian*; Xmas. *Christmas*.

XAN'THIC OX'YDE, in chemistry, a very rare species of calculus, of a reddish or yellow colour, soluble both in acids and alkalies; and its solution in nitric acid, when evaporated, possesses a brilliant yellow tint: hence its name.

XAN'THID, or XAN'THIDE, in che-

SO DURABLE IS CARBON, THAT THE CHARRED BEAMS AT HERCULANEUM HAVE UNDERGONE NO CHANGE IN EIGHTEEN HUNDRED YEARS.

ANCIENT PHYSICIANS ATTRIBUTED TO PURE SPIRIT THE IMPORTANT PROPERTY OF PROLONGING LIFE; HENCE THE TERM "AQUA VITÆ."

PURE BRANDY, LIKE ANY OTHER SPIRIT, HAS NO COLOUR; BURNT SUGAR, OR ANY COLOURING SUBSTANCE WILL SERVE THE PURPOSE.

mistry, a compound of xanthogene and a metal.

XANG'TI, in theology, a name among the Chinese for the Supreme Being.

XAN'THE, in botany, a shrub of Guiana, where it is called *quapoy:* it derives its generic name from the yellow juice it contains.

XAN'THICA, in antiquity, a Macedonian festival, so called because it was observed in the month Xanthus, which is supposed to have been the same as April.

XAN'THIUM, in botany, the lesser burdock. This herb, *Xanthium strumarium* of Linnæus, was once esteemed in the cure of scrophula, but, like most other remedies against this disease, proves ineffectual.

XAN'THOGEN, in chemistry, the base of a new acid, produced by the mixture of a solution of pure potassa with bisulphuret of carbon. It contains sulphur, carbon, and hydrogen; and obtained its name from the yellow colour of its compounds.

XANTHORRHI'ZA, in botany, a low shrub of North America, class 5 *Pentandria*, order 7 *Polygamia*.

XANTHOX'YLLUM, in botany, the tooth-ache tree, a native of America. It belongs to class 22 *Dioecia*, order 5 *Pentandria*.

XEBEC', a small three-masted vessel, used in the Mediterranean sea, and on the coasts of Spain, Portugal, and Barbary. Being generally equipped as a corsair, the xebec is constructed with a narrow floor, for the sake of speed, and of a great breadth, so as to be able to carry a considerable force of sail without danger of overturning. When close hauled, it carries large lateen sails. The Algerine xebecs usually carried from 16 to 24 guns, and from 300 to 450 men, two-thirds of whom were soldiers.

XENELA'SIA, in antiquity, a law among the Spartans, by which strangers were excluded from their society, not out of fear lest they should imitate the Spartan manners, but lest the Spartans should be contaminated by foreign vices. It was a barrier set up against contagion; but was not so strict as to exclude deserving men, or any talent worthy of being received.

XE'NIA, among the Greeks and Romans, were presents made by strangers to such persons as had treated them with kindness and hospitality. *Xenia* was also a name given to the gifts and presents made to the governors of provinces by the inhabitants of them.

XENODO'CHIA, in antiquity, places where strangers were lodged and entertained.

XENOPARO'CHI, in antiquity, Roman officers whose business it was to provide every necessary for ambassadors.

XERAN'THEMUM, in botany, a genus of plants, class 19 *Syngenesia*, order 2 *Polygamia superflua*.

XERA'SIA, in anatomy, an excessive tenuity of the hairs, similar to down.

XEROCOLLYR'IUM, in medicine, a dry collyrium or eye-salve.

XEROMY'RUM, in medicine, a dry ointment.

XEROPH'AGY, the name given to a sort of fast which was adopted in the primitive ages of Christianity, and which consisted entirely of dry viands.

XEROPH'THALMY, in medicine, a dry red soreness or itching of the eyes, without swelling or a discharge of humours.

XES'TA, in antiquity, an Athenian measure of capacity, answering to the Roman sextarius.

XIPH'IAS, in ichthyology, the *sword-fish;* a genus of fishes of the order *Apodes*. There are three species, of which the *Xiphias gladius*, or common sword-fish, is of the length of twenty feet, and is particularly distinguished by its upper jaw being stretched to a considerable distance beyond the lower, flat above and beneath. It is an extremely rapacious fish, and finds in the above instrument a weapon of attack and destruction able to procure it the most ample supplies. It is found in the Mediterranean, chiefly about Sicily, and is used by the inhabitants of that island for food.

XIPHID'IUM, in botany, a West-India plant, placed under class 3 *Triandria*, order 1 *Monogynia*.

XI'PHOID, a term given by anatomists to parts which have some resemblance to an ancient sword, as the *xiphoid cartilage*, placed at the bottom of the breast-bone.

XYLAN'THRAX, in mineralogy, *bovey-coal*. It consists of wood penetrated with petroleum or bitumen, and frequently contains pyrites, alum, sulphuric acid, &c. By distillation it yields a fetid liquor, mixed with a volatile alkali and oil, part of which is soluble in spirit of wine, and part of a mineral nature, and insoluble.

XY'LO AL'OES, or *Aloe wood*, in the materia medica, is the product of a tree growing in China, and some of the Indian islands. This drug is distinguished into the calambac, the common lignum aloes, and calambour. The calambac or finest aloes wood, is the most resinous of all the woods we are acquainted with; it is of a light spongy texture, very porous, and its pores so filled up with a soft and fragrant resin, that it yields to pressure like wax, or may be moulded by chewing in the mouth like mastich. Its scent, while in the mass, is very fragrant; and its taste acrid and rather bitter, but very aromatic and agreeable. The *common lignum aloes* is more dense, and consequently less resinous, and not so strongly perfumed as the former. The *calambour*, called also *agallochum sylvestre*, is light and friable, of a dusky green mottled colour, fragrant, but less so than the others. This is the aloe wood used by cabinet-makers and inlayers. The drug was formerly much esteemed as a cordial, but is at present very little used in medicine.

XYLOCAR'PUS, in botany, an East-Indian tree, class 8 *Octandria*, order 1 *Monogynia*.

XYLOCO'PIA, among the Greeks, a sort of punishment inflicted with a cudgel.

XYLOG'RAPHY, wood-engraving; the act or art of cutting figures in wood, in representation of natural objects. [See WOOD-ENGRAVING.]

XY'LON, a species of punishment in use among the Greeks, which answered to our putting offenders in the stocks.

XYLOPHYL'LA, in botany, a genus of plants which differs from the *Phyllanthus*, only in having the flowers growing from the notches of the leaf.

XYLO'PIA, in botany, Bitterwood, a Brazilian tree, remarkable for the bitterness which its wood communicates to water.

XYNOE'CIA, an Athenian festival, observed in memory of Theseus having united all the petty communities of Attica into one commonwealth, whose assemblies were ever after to be held in the Prytaneum, at Athens.

XY'RIS, in botany, a plant of the Cape of Good Hope, placed under class 3 *Triandria*, order 1 *Monogynia*, of the Linnæan system. ——Also a name for the *Hyacinthus* of the poets.

XYS'TARCH, an officer in the Grecian gymnasium, who presided over the *xystus*, as lieutenant to the gymnasiarch. His business was to superintend the *athletæ* in their exercises in the two *xysti*.

XYS'TER, in surgery, an instrument used for scraping bones.

XYS'TUS, or XYS'TOS, among the Greeks and Romans, a portico covered at the top, designed for the exercise of the wrestlers when the weather did not permit them to contend in the open air. The Xystus made a necessary part of a gymnasium: and the name given to the athletæ who performed their exercises there, was *Xystici*.

Y.

Y, the twenty-fifth letter of the English alphabet, is sometimes used as a vowel, and at other times as a consonant: as the latter at the beginning of words. In the middle and at the end of words, *y* is precisely the same as *i*; being sounded as *i* long, when accented, as in *reply, defy*; and as *i* short, when unaccented, as in *synonymous, liberty, ability*, &c.——Y, as a numeral, stands for 150, and with a dash over it, for 150,000.——Y, by the Pythagoreans, was made the emblem or symbol of virtue and vice. The broad line at the bottom of the letter, represents the innocency and simplicity of infancy and early youth. The place where it is divided into two parts shows us the years of discretion, when we take the side of wisdom or of folly, and can discriminate what is right from what is wrong. The narrow line on the right exhibits to the fancy the strait path that leads to happiness, and the difficulties which attend a course of virtue. The broad line on the left represents the broad road that leads to destruction, and the seducing blandishments of vice.

YACHT, a sailing vessel, pleasure boat, or small ship with one deck, sufficiently large for a sea voyage. In its original signification it is a vessel of state used to convey princes, ambassadors, and other great personages from one kingdom to another. It is usually fitted with a variety of convenient apartments and suitable furniture. The smaller yachts are generally rigged as sloops.

YAM (*dioscorea sativa*), in botany, the fruit of a slender herbaceous vine, having large tuberous roots, which are much used for food in the East and West Indies. They are eaten either roasted or boiled; are mealy, palatable, nutritious, and easy of digestion; and the flour is also used either for bread or puddings. The *Dioscorea aculeata*, by some considered only an improved variety of the former, is universally cultivated in the East and West Indies, and in all the islands of the Pacific. The varieties are propagated like the potato, but they come to maturity much sooner, and the roots frequently weigh thirty pounds.

YAN'KEE, a word commonly applied to an inhabitant of the United States, as *John Bull* is to an Englishman or *Mynheer* to a Dutchman. It is said to have originated in a corrupt pronunciation of the word *English* by the native Indians of America, who called the early settlers from Great Britain *Yengeese*.

YAP'ON, in botany, the *Ilex cassine*, or south-sea tea; a shrub, the leaves of which are used as a tea and a medicine.

YARD, a measure of three feet or thirty-six inches.——*Yards of a ship*, those long pieces of timber which are made a little tapering at each end, and are fitted each across its proper mast, with the sails made fast to them, so as to be hoisted or lowered as occasion serves. They have their names from the masts to which they belong.—There are several sea-terms relating to the management of the yards; as, *square the yards*; that is, see that they hang right across the ship, and no yard-arm traversed more than another: *top the yards*, that is, make them stand even.——*Yard-arm* is that half of the yard which is on either side of the mast when the yard lies athwart the ship.——*Yard-arm and yard-arm*, a phrase applied to two ships when they are so near that their yard-arms nearly touch each other.——*Yards*, for ship-building, called *dock-yards*, are some of the greatest establishments in England, particularly

the public yards at Chatham, Deptford, Woolwich, Sheerness, Portsmouth, and Plymouth, for ships of war. [See DOCKS.]

YARN, primarily woollen thread; but it is applied also to other species of thread, as to cotton and linen; and in rope-making, to one of the hempen threads of which a rope is composed.

YARROW, in botany, a plant of the genus *Achillea;* the milfoil. The flowers are small, white, and disposed in a terminal corymb: it has a strong and disagreeable odour; but it is chiefly distinguished by its excessively dissected leaves, from which it obtains the name of *milfoil*, or a plant of a thousand leaves.

YAWS, in medicine, a severe cutaneous disease, introduced from Africa to the West Indies. It is said to derive its name from *yaw*, the African word for a raspberry. It affects a person but once, and is propagated solely by the infection of the matter of the pustules, applied to a part of the body where the skin is broken.

YAX, in zoology, a species of ox found in Thibet. It has cylindric horns, curving outwards, and long pendant hair.

YEAR, the period in which the revolution of the earth round the sun, and the accompanying changes in the order of nature, are completed. The year, as regulated by the sun, is called *solar;* and, as regulated by the moon, is called *lunar.* The solar year is the interval of time in which the sun finishes his apparent course through the zodiac, and contains 365 days, 5 hours, and 49 minutes. The lunar year consisted of 12 lunar months. But besides the solar and lunar years, we may mention the *civil* year, which different nations adopted without regard to *astronomical* accuracy, to render the computation of time in the common affairs of life more easy. The Jewish year consisted of 12 months, unless it happened to be intercalary, when it had 13. The ancient Hebrews used to regulate their months by the course of the sun, and each of them had 30 days; but after their captivity in Egypt, they adopted the lunar months, containing alternately 29 and 30 days, in all 354 days. This was made to agree with the solar year by adding eleven and sometimes twelve days at the end of the year, or by an *embolismic* month. They had an *ecclesiastical* as well as a *civil* year; the first began in the month of Nisan or Ahib, which answers to part of our March and April, because about this time the Israelites came out of Egypt. By this they reckoned their feasts. The second began in the month Tisri, about the middle of our September, because they fancied the world to have been created about that time. The Roman year was lunar, which, as settled by Romulus, consisted of ten months, four of which contained 31, and the other six 30 days, in all 304 days; which fell 50 days short of the true lunar year, and 61 of the solar. The beginning of the year, according to this calculation, must necessarily be very vague and variable; and to remove this inconvenience, Romulus required so many days to be added to the year as should bring the state of the heavens to a correspondence with the first month. These additional days were not incorporated with any months, or called by any particular name. Romulus's year began about the vernal equinox. The first month was March, then followed April, May, June, Quintilis, Sextilis, September, October, November, December: so that the *numeral* months were named according to their order in the series. Numa Pompilius, to correct and reform the year, made two months, January and February, of the days which used to be confusedly added to the year of Romulus. Numa's year then consisted of 12 months, of which seven had 29 days, and the rest 31, except February, which had only 28; in all, 355 days; a number exceeding the lunar, but falling short of the solar year ten days. The year, therefore, upon this principle, must be vague and unfixed as to the time of its commencement. Numa, however, desirous of fixing it to the winter solstice, ordered 22 days to be intercalated every second year, 23 every fourth year, 22 every sixth, and 23 every eighth year; and these intercalations to be made in February. But this rule failing of its object, it was thought proper to add only 15 days every eighth year, instead of 23. The care of the whole was committed to the Pontifex Maximus, who, either by inattention or ignorance, suffered errors to creep in, and thus caused much confusion. Such was the state of the Roman year till the time of Julius Cæsar. The year, as reformed by him, is a solar year, consisting of 365 days, except every fourth year, called bissextile, which contains 366. The Julian year, therefore, is 365 days, 6 hours, exceeding the solar year by 11 minutes, which in 131 years amount to a whole day. Thus stood the year till the reformation of it made by Pope Gregory. The *Gregorian year* is, consequently, the Julian year corrected, and is the year now used in Europe. From the difference between this and the Julian year, arises the distinction of Old and New style.——The Mahometans begin their year when the sun enters Aries; the Persians in the month answering to our June; the Chinese and most of the Indians begin it with the first moon in March. At Rome there are two ways of computing the year, the one beginning at the nativity of our Lord, which the notaries use; the other in March, on occasion of the incarnation, and it is from this the papal bulls are dated. The civil or legal year, in England, as well as the historical year, commences on the 1st of January. The church, as to her solemn service, begins the year on the first Sunday in Advent, which is always the next to St. Andrew's day.——*Year and day* in law, signifies a certain time that by law determines a right, or works prescription; as in the case of an estray, if the owner should not challenge it within that time, it becomes forfeited to the lord; so of a wreck, &c.

YEAST, the barm or froth which rises in beer during its state of fermentation.

If preserved to be put into other fermentable liquors at a future period, it will exert a similar fermentative action. It is also used in the making of bread, its property being to raise the dough, and thereby render it light and more wholesome. Medicinally, yeast is antiseptic and tonic; and is also used in making the fermenting cataplasm.

YEL'LOW, in chromatics, a bright colour, as its name imports. It reflects light more than any other colour, except white.

YEL'LOW BIRD (*fringilla tristis*), in ornithology, the American goldfinch, an active and gregarious bird, of a rich lemon-yellow colour; the crown, wings, and tail black. The female and young are of a brown olive colour, and in winter the male assumes the same sober livery. When caged, their song greatly resembles that of the canary.

YELLOW-FE'VER, in medicine, a malignant disease frequent in hot climates, which often suffuses the skin with a yellowish colour.

YEL'LOW-HAMMER, in ornithology, a bird of the genus *Emberiza*. Its throat and the crown of the head are yellow.

YEL'LOWS, a disease of horses, cattle, and sheep, in which the eyes are tinged with a yellow colour, proceeding often from obstructions in the gall-ducts.

YEN'ITE, a mineral consisting chiefly of silex, lime, and oxyde of manganese. It occurs both crystalized and massive; the form of the crystals being that of a rhomboidal prism. It somewhat resembles hornblende. This mineral is called *yenite* or *jenite*, in commemoration of the battle of Jena, and also *lievrite*, from the name of its discoverer.

YEO'MAN, in English polity, a *commoner*, or a plebeian of the first or most respectable class. In ancient times, it denoted one of those who held *folk-land*; that is, had no *fief*, or book-land, and therefore did not rank among the *gentry*. What he possessed, however, he possessed independently; he was, therefore, no man's vassal. To understand the true condition of the ancient yeomen, it must be observed that there were some lands which never became subject to the feudal system. These were called folk-lands, or the lands of the people. When therefore, it is said that the sovereign is the lord of the soil of all England, the assertion is not true. He is certainly the lord paramount of all fiefs; but he has no such reversionary interest in lands that were never held in fee. [See FEUDAL SYSTEM, GAVEL-KIND, &c.]——The collective body of yeomen or freeholders is termed *Yeomanry*.——*Yeomen of the Guard*, a certain description of foot-guards, who attend immediately on the person of the sovereign. They were established by Henry VIII., and their office and dress continue the same.

YEW (*taxus baccata*), in botany, an evergreen tree, common in England and in many parts of the north of Europe. The wood, which is peculiarly hard, smooth, and tough, was manufactured into bows; but, since the introduction of fire-arms, the tree is no longer planted except for ornament. The wood is beautifully veined, and susceptible of a very high polish. The leaves are extremely poisonous, and cattle are frequently destroyed by them.

YT'TRIA, in mineralogy, a very rare earth, obtained from a species of *gadolinite*, discovered at Ytterby in Sweden; hence its name. It resembles glucine in several of its properties. It is smooth and insipid; is infusible alone, but vitrifies with borate of soda. It combines with the acids, and is precipitated from those solutions by ammonia and prussiate of potash. It is perfectly white; has neither taste nor smell; and its specific gravity is 4.842. The name of its metallic base is *yttrium*.

YTTRO-CE'RITE, a massive mineral, of a grayish or violet blue colour. It consists of the oxyde of cerium, yttria, lime, and fluoric acid.

YTTRO-COL'UMBITE, a mineral containing a considerable portion of yttria.

YTTRO-TAN'TALITE, in mineralogy, an ore of tantalum. It occurs massive, has a metallic lustre, and is of a blackish brown colour. Under the blow-pipe it decrepitates at first, but melts, by increase of heat, into a greenish-yellow clay.

YULE, the name anciently given to Christmas, or the feast of the nativity of our Saviour.

YUNX, in ornithology, the *wry-neck*, a genus of birds of the order *Picæ*, of which there is only a single species: it is allied to the woodpecker in some respects, and in others to the cuckoo. It makes no nest, but lays eight or ten eggs on the bare wood in hollow trees. In England it is a bird of passage, generally appearing a few days before the cuckoo. Its food consists of ants: it is never seen in flocks, and in pairs only during the spring and summer. Its name of *wry-neck* is derived from a habit of twisting its neck in a singular manner.

Z.

Z, the last letter of the English alphabet, is a sibilant articulation and semi-vowel; bearing the same relation to *s*, as *v* does to *f*. In Italian, it is sometimes sounded like our *ts*, sometimes like *ds:* in Spanish, it corresponds to our *th;* and in French, when pronounced at all, it has the sound of a forcibly articulated *s*. As a numeral, Z stands for 2,000, and with a dash over it, for 2,000,000.

ZAC'CHO, in architecture, the lowest part of the pedestal of a column.

ZAF'FRE, is the oxyde of cobalt, employed for painting pottery-ware and porcelain of a blue colour. The blue of zaffre is the most solid and fixed of all the colours that can be employed in vitrification. It suffers no change from the most violent fire. It is successfully employed to give shades of blue to enamels, and to the crystal glasses made in imitation of some opaque and transparent precious stones, as the lapiz lazuli, the turquoise, the sapphire, and others of this kind. The zaffre of commerce is never quite pure.

ZAIMS, a name for certain leaders or chiefs among the Turks, who support and pay a mounted militia of the same name.

ZANO'NIA, in botany, a tree of Malabar, placed under class 22 *Dioecia*, order 5 *Pentandria*, in the Linnæan system.

ZAR'NICH, in mineralogy, the name of a genus of fossils (supposed to be sulphuretted arsenic), which are inflammable, of a plain uniform structure, soluble in oil, and burning with a whitish flame and noxious smell.

ZE'BRA, in zoology, an animal of the genus *Equus*, beautifully marked with stripes, and having a short mane, erect ears, and tail like an ass. It is a native of Africa, about the size of a mule, and is wild, swift, and vicious.

ZECHARI'AH, one of the minor prophets, who prophesied in the reign of Darius Hystaspes. The design of the first part of Zechariah's prophecy, like that of his contemporary, Haggai, is to encourage the Jews to proceed with rebuilding the Temple, by giving them assurance of God's aid and protection. From this he proceeds to foretel the glory of the Christian church (the true Temple of God), under its great High-priest and Ruler, Jesus Christ; of whom Zerubbabel and Joshua were figures. He treats of his death, sufferings, and kingdom, in many particulars not mentioned by any other of the minor prophets before him; everything relating to those great events becoming more explicit, in proportion as their accomplishments drew nearer. His style, like that of Haggai, is for the most part prosaic, especially towards the beginning; the last six chapters are more elevated; for which reason, among others, these six chapters are, by many commentators, ascribed to the prophet Jeremiah.

ZED'OARY, a medicinal root, belonging to a plant growing in the East Indies, whose leaves resemble those of ginger, only that they are longer and broader. It is a warm stomachic.

ZEINE, a substance of a yellowish colour, soft, insipid, and elastic, procured from the seeds of Indian corn.

ZEM'INDAR, in India, a feudatory or landholder who governs a district of country and is the receiver of the taxes. His jurisdiction is called a *zemindary*. It appears from history, that, in times prior to the irruption of the Mahometans, the rajahs who held their residence at Delhi, and possessed the sovereignty of Hindostan, deputed officers to collect their revenues. When the emperor Shebba-ul-Dien Chory conquered the empire of Hindostan, at the end of the twelfth century, he left Cutub-ul-Dien to be his viceroy. From that time the customs and practices of the Mahometans began gradually to be established in India: their armies were sent into the countries of the reduced rajahs, under the command of omrahs, in order to preserve the conquest; and lands were allotted to them to defray the expenses.

ZEND, or ZENDAVES'TA, a book ascribed to Zoroaster, and containing his pretended revelations; which the ancient magicians and modern Persians, called also Gaurs, observe and reverence in the same manner as the Christians do the Bible, and the Mahometans do the Koran, making it the sole rule both of their faith and manners.

ZEN'ITH, in astronomy, that point in the visible celestial hemisphere which is vertical to the spectator, and from which a direct perpendicular line passing through the spectator, and extended, would proceed to the centre of the earth. Each point of the surface of the earth has therefore its corresponding zenith.——The *zenith distance* of a heavenly body is the arc intercepted between the body and the zenith, being the same as the co-altitude of the body.

ZE'OLITE. Many mineral substances have been confounded under this name, particularly such as are fusible by the blow-pipe without addition, and exhibit a phosphoric brilliancy at the moment of fusion. Zeolite commonly occurs in a four-sided prism, terminated by a four-sided pyramid; often in small fibrous masses. It is found in trap and lava.——*Zeolitiform*, resembling the zeolite in form.——*Zeolitic*, pertaining to or consisting of zeolite.

ZEPHANI'AH, a canonical book of the Old Testament, containing the predictions of Zephaniah, the son of Cushi, and grand-

son of Gedaliah; being the ninth of the twelve lesser prophets. He prophesied in the time of king Josiah, a little after the captivity of the ten tribes, and before that of Judah; so that he was contemporary with Jeremiah.

ZEPH'YRUS, or ZEPH'YR, the west wind; a wind blowing from that cardinal point opposite to the east. The poets personify it, and represent Zephyrus as the mildest and most gentle of all the deities of the woods: the character of this personage is youth and gentleness. It is also called Favonius and Occidens.

ZER'DA, in zoology, an animal of the canine genus, found in the desert of Zahara. It is of a yellowish brown colour, about ten inches in length, with a pointed nose, long whiskers, large black vivid eyes, and remarkably fleet.

ZE'RO, the point of a thermometer from which it is graduated. The zero of Fahrenheit's thermometer is fixed at the point at which the mercury stands when immersed in a mixture of snow and common salt. In Wedgwood's pyrometer, the zero corresponds with 1077° on Fahrenheit's scale. Zero, in the thermometers of Celsius and Reaumur, is the point at which water congeals.

ZERTA, or the ZERTE, a fish caught in the rivers of Italy and some other places, of the figure of a chub, and called capito anadromus, and the blike. It seldom grows to more than two pounds weight.

ZE'TA, a closet or small chamber, with pipes running along the walls, to convey into it fresh air, or warm vapour from below.——Also, a Greek letter.

ZETET'IC, in mathematics, an epithet applied to that method of investigation which proceeds by inquiry, or the solution of problems.

ZEUG'MA, a figure in grammar by which an adjective or verb which agrees with a nearer word, is, by way of supplement, referred to another more remote.

ZIB'ET, in zoology, an animal of the genus *Viverra*; the ash-gray weasel, striped with wavy black lines and an annulated tail. It resembles the Indian civet.

ZIBETHUM, the soft, unctuous, odoriferous substance, produced by the *viverra zibetha* or civet-cat. It has a grateful smell when diluted, an unctuous subacrid taste, and possesses stimulating, nervine, and antispasmodic virtues.

ZINC, a metal of a bluish-white colour, somewhat brighter than lead; of considerable hardness, and so malleable as not to be broken with the hammer, though it cannot be much extended in this way. It is very easily extended by the rollers of the flatting mill. Its specific gravity is from 6.9 to 7.2. In a temperature 200° and 300° Fahrenheit, it has so much ductility that it can be drawn into wire, as well as laminated. The zinc thus annealed and wrought retains the malleability it had acquired. When broken by bending, its texture appears as if composed of cubical grains. On account of its malleability, it is difficult to reduce it into small parts by filing or hammering, but it may be granulated, like the malleable metals, by pouring it when fused into cold water, or if it be heated nearly to melting, it is then sufficiently brittle to be pulverised. It melts long before ignition, at about 700° of Fahrenheit's thermometer; and, soon after it becomes red hot, it burns with a dazzling white flame, of a bluish or yellowish tinge, and is oxydized with such rapidity that it flies up in the form of white flowers called the flowers of zinc, or philosophical wool. These are generated so plentifully, that the access of air is soon intercepted; and the combustion ceases, unless the matter be stirred, and a considerable heat kept up. The white oxyde of zinc is not volatile, but is driven up merely by the force of the combustion. When it is again urged by a strong heat, it becomes converted into a clear yellow glass. If zinc be heated in close vessels, it rises without decomposition. The greater part of the zinc works are situated in the neighbourhood of Birmingham and Bristol. The manufacture of brass, which has been long one of the staple articles of these towns, was probably the cause of the introduction of this branch of industry, at the period when brass began to be made by the direct union of copper with metallic zinc, instead of calamine.

ZIN'GIBER, in botany, the Linnæan name of the plant *ginger*. The white and black ginger are both the produce of the same plant, the difference depending on the mode of preparing them. Ginger is considered as an aromatic, antispasmodic, and carminative; it is serviceable in flatulent diseases, debility, and in torpid and phlegmatic constitutions to excite brisker vascular action.

ZIR'CON, a mineral originally found in Ceylon, in the sands of rivers, along with spinel, sapphire, tourmalin, and iron sand. Zircon, hyacinth, and zirconite, are regarded as varieties of the same species. They are essentially composed of the earth zirconia, with silex, and a minute portion of iron. The common form is a rectangular four-sided prism. Zircon has a white colour, is exceedingly heavy, and rough or harsh to the touch like silex. It has neither taste nor odour, and is insoluble in water, but forms with it a kind of jelly. It melts with borax into a transparent colourless glass. It suffers in a charcoal crucible a pasty fusion by intense heat, and contracts in its dimensions, acquiring a gray colour and scintillating hardness. In this state it is very hard and insoluble in acids. Its specific gravity is 4.3. Neither air nor combustible bodies act upon it. It is soluble in water, but retains, while drying in the air, a large quantity of it, which gives it the semi-transparency and appearance of yellow jelly, or gum Arabic; and it exhibits the same vitreous fracture. It unites with all the acids and forms salts, differing from those of the other bases by being decomposable by alumine, glucine, the alkalies, and by mere heat. It fuses with alumine and silex. It is soluble even by boiling

THE WICK OF A CANDLE HAVING BEEN STEEPED IN LIME-WATER AND NITRE, A PURER FLAME AND A SUPERIOR LIGHT IS PRODUCED.

THE ZOOLOGICAL SOCIETY OF LONDON WAS FORMED IN 1826, AND INCORPORATED BY ACT OF PARLIAMENT IN 1829.

THE SURREY ZOOLOGICAL GARDENS STOCKED WITH ANIMALS REMOVED FROM THE MENAGERIE AT EXETER CHANGE, STRAND, 1830.

with a solution of alkalies, neither can it be fused with them by means of heat; but it is soluble in alkaline carbonates.

ZIRCO'NIA, in mineralogy, a peculiar earth obtained from zircon. Its metallic base is called *zirconium*.

ZIR'CONITE, in mineralogy, a variety of the zircon.

ZIV'OLO, in ornithology, a bird resembling the yellow-hammer, and by some naturalists considered as the same species.

ZO'DIAC, in astronomy, an imaginary ring or broad circle, in the heavens, in form of a belt or girdle, within which the planets all make their revolutions. In the very middle of it runs the ecliptic, or path of the sun in his annual course; and its breadth, comprehending the deviation or latitudes of the earlier known planets, is by some authors accounted 16, some 18, and others 24 degrees. The zodiac, cutting the equator obliquely, makes with it the same angle as the ecliptic, which is its middle line, which angle, continually varying, is now nearly equal to 23° 28′. This is called the obliquity of the ecliptic, and constantly varies between certain limits which it can never exceed. The zodiac is divided into 12 equal parts, of 30 degrees each, called the signs of the zodiac, being so named from the constellations which anciently passed them. But the stars having a motion from west to east, those constellations do not now correspond to their proper signs; whence arises what is called the precession of the equinoxes [which see]. And, therefore, when a star is said to be in such a sign of the zodiac, it is not to be understood of that constellation, but only of that dodecatemory, or 12th part of it.——It is a curious fact, that the solar division of the Indian zodiac is the same in substance as that of the Greeks, and yet that it has not been borrowed either from the Greeks or the Arabians. The identity, or at least striking similarity, of the division, is universally known, and it was thought that the Brahmins received it from the Arabs. But in the second volume of "Asiatic Researches," the accomplished president, Sir William Jones, has proved unanswerably, that neither of those nations borrowed that division from the other; that it has been known among the Hindoos from time immemorial; and that it was probably invented by the first progenitors of that race, whom he considers as the most ancient of mankind, before their dispersion. [See CONSTELLATION.]

ZODI'ACAL LIGHT, a brightness sometimes observed in the zodiac, resembling that of the galaxy or milky-way. It appears at certain seasons, viz. towards the end of winter and in spring, after sunset; or before his rising, in autumn and beginning of winter, resembling the form of a pyramid, lying lengthways with its axis along the zodiac, its base being placed obliquely with respect to the horizon. This phenomenon was first described and named by the elder Cassini, in 1683. [See AURORA BOREALIS.]

ZONE, in geography and astronomy, a circular division of the earth, by which is described the degrees of heat peculiar to different regions. The zones are five; the torrid zone, extending from tropic to tropic; two temperate or variable zones, situated between the tropics or polar circles; and two frigid zones, situated between the polar circles and the poles. The zones are distinguished from one another by various phenomena. To the inhabitants of the torrid zone the sun is vertical twice a year. In the middle of that zone the days and nights are always equal, viz. 12 hours, and the twilight is short because the sun descends perpendicularly below the horizon. Its circuit under the equator is about 9,000 leagues, and under the tropics 8253. Within its limits there are only two seasons in the year, viz. winter and summer: but these are diversified by various causes.

ZOOL'OGY, is that science which contemplates the attributes and the systematic arrangement of living creatures; as botany is that of the vegetable, and mineralogy that of the mineral or fossil kingdom. Although no classifications exist in nature, where all the various individuals constitute one continued and uninterrupted chain; yet they considerably assist the memory, and may be rendered truly useful guides in the study of animated being. The most ancient division of animals is that of Aristotle, who divided them into *viviparous*, that is, those which produce living and perfectly formed young, and into *oviparous*, or such as are produced from eggs. This kind of division continued to be in use, with some modification, till towards the decline of the 17th century; when our countryman, Ray, formed a new classification, founded chiefly on the structure and nature of the heart and lungs in the different tribes; and the Linnæan arrangement of the animal kingdom is, in fact, founded upon that of Ray, particularly with respect to quadrupeds. That of Cuvier, in its subordinate divisions, is founded upon both these; but in its primary and leading distinctions, upon the nervous or sensorial, instead of upon the respiratory and sanguineous systems; all animals being, according to the scheme of Cuvier, divided into vertebrated and invertebrated; those furnished with a back-bone, or vertebral chain for the purpose of inclosing the spinal marrow, and those destitute of such a chain: the secondary divisions consisting of *vertebrated animals with warm blood*, or blood warmer than the surrounding medium, and *vertebrated animals with cold blood*, or blood colder than the surrounding medium: invertebrated animals *with blood-vessels*, and invertebrated animals *without blood-vessels*. Cuvier's system, as well as that of Blumenbach, which, in its general divisions, is similar, and differs from it only in its orders or other subdivisions, is more abstruse than that of Linnæus; and though it is generally more definite than the latter, and presents a noble specimen of scientific ingenuity, the Linnæan system is held in such high estimation, and is so generally adopted, that we have found it necessary in

this work to follow, generally, the classification of Linnæus; and, therefore, to that we shall here confine ourselves. To proceed, then, to the Linnæan arrangement. By this, all animals are divided into six classes, of which, the characters are chiefly taken from the internal structure of the beings treated of. The six classes are as follow; viz. *Mammalia, Aves, Amphibia, Pisces, Insecta, Vermes.* 1. The class MAMMALIA comprehends all such animals as suckle their young, being furnished with proper organs for that purpose. In all the animals of this class, the plan or fabric of the skeleton, as well as their internal organs, bears a degree of general resemblance to that of Man. Their *outward* covering consists, in general, of hair; but in some few animals the hair takes the form of distinct spines or quills, as in the porcupine and hedge-hog tribe. In others, the same substance is expanded into the appearance of strong and broad scales, as in the genus *Manis;* and in others, as in the armadillo, instead of hair, we meet with strong bony zones or bands, forming a regular coat of mail. The feet of animals in the class Mammalia are generally four in number, and furnished with separate toes, guarded by claws. In some, as in the monkey tribe, the feet have the appearance of hands; and in others, they are shod with hoofs, either entire or divided. Such of the Mammalia as possess the power of flight, as in the bat tribe, the fore-feet are drawn up into slender fingers of an immoderate length, and united by a common membrane or web. In some of the aquatic Mammalia, as the seals, both the fore and hind feet are very strongly and widely webbed; and in the whale, there are, in reality, only two feet, the bones of which are inclosed in what are commonly called the fins, while the lobes of the tail answer the purpose of a pair of hind feet. The arms, or offensive and defensive weapons of the Mammalia, besides the claws and teeth, are principally the horns, inserted in various directions, and on different parts in different tribes. The horns are either perennial or annual. In the rhinoceros, the horn is perennial, and situated on the top of the nose. In the deer tribe, the horns are annual, branched, covered while young with a soft villous skin or coat; they grow from the tip, and become very solid and strong at their full size. In the ox tribe, as well as in the sheep and goat, they are hollow, mounted on a bony core, and grow from the base. The teeth in Quadrupeds, or Mammalia, are of three kinds: 1. The front or cutting teeth are of a broad, compressed structure, designed for cutting food: 2. Sharp, lengthened, or canine teeth; situated on each side the cutting teeth, and calculated for tearing and dividing the food: and 3. Incisores, or grinders, with broad, angular tops, for grinding the food. The teeth, as will be seen, afford a principal character in forming the orders and genera. In some the canine teeth are wanting; in others the front teeth; and some few are totally destitute of teeth. The tail in quadrupeds is formed by a continuation of the vertebræ, or joints of the back-bone; and is, in some, of great length, and covered with very long hair; in others it is very short; and in some few entirely wanting, as in the apes. The senses of the mammalia consist, as in man, of the organs of sight, hearing, tasting, and smelling, and the power of feeling; and in many of these animals their organs are of greater acuteness than in man. The eyes, in some quadrupeds, as the horse, are furnished with what is called a nictating membrane, or semi-transparent guard, situated beneath the eye-lids, and which can, at pleasure, be drawn over the ball of the eye for its defence. The nose, or organ of smelling, is more or less compressed or lengthened. In the elephant it is extended in a most wonderful manner into a long and tubular proboscis, or trunk, at the tip of which are placed the nostrils. The teats or *mammæ*, are found in these animals, and give rise to the Linnæan title to the whole class. The MAMMALIA are divided into seven *Orders.* 1. The first of these orders is denominated *Primates,* as containing the chiefs of the creation. Its characters are four front or cutting-teeth, above and below, and one canine or sharpened tooth on each side of these. In a mere zoological view, the human kind stands at the head of this order, forming the Linnæan genus *Homo.* The other genera of the order *Primates* are the Lemur, or Macauco, and the Bat. 2. The second order, denominated *Bruta,* is characterized by a want of front or cutting teeth, in the upper and lower jaw: the feet are armed with strong claws; their pace is in general slow; and their food is principally vegetable. Of this order the chief genera are the Rhinoceros, the Elephant, the Bradypus or sloth, the Myrmecophaga or ant-eater, the Dasypus or armadillo, and the Platypus or Ornithorynchus, or duckbill. 3. The third order, called *Feræ,* contains, among other genera, the Phoca or seal, Canis or the dog, Felis or the cat, Ursus or the bear, and Erinaceus or the hedgehog. This order contains the predacious quadrupeds, all agreeing in having teeth calculated for feeding on flesh. The front teeth, which are usually six above and below, approaching to a conical or pointed figure; the canine teeth are long, and the grinders not flattened at the top. The claws of the feet are sharp, and more or less curved in the different species. 4. The fourth order is entitled *Glires.* The principal character of the animals of this order consists of a pair of very conspicuous, strong, and lengthened teeth, placed close together in the front of both jaws. They have no canine teeth, but are furnished with grinders on each side. This order comprehends beavers, mice, squirrels, hares, and other genera. 5. The fifth order, named *Pecora,* contains all the *Cattle,* commonly so called, as oxen, sheep, goats, and others. It also comprises the camelopards, the deer tribe, the antelopes, the musk, and a few others. The ani-

mals of this order have no fore teeth in the upper jaw, but six or eight in the under jaw. They have four stomachs: they are hoofed, and the hoofs are divided in the middle; and, excepting the camel, they have two false hoofs, which, in walking, do not touch the ground. Such as have horns, have no tusks; and such as have tusks, have no horns. Another characteristic belonging to most of this tribe of Mammalia, is the power of rumination; that is, of throwing up into the mouth at intervals, a portion of food which has been hastily swallowed during feeding, in order that it may undergo a more complete grinding by the teeth. The whole order *Pecora*, without a single exception, feeds entirely on vegetable food. 6. The sixth order is denominated *Belluæ*, and includes four genera only, viz. the horse, the hippopotamus, the hog, and the tapir. The animals of this order have obtuse fore-teeth in each jaw; and they have the peculiar property of breathing through the nostrils, and not through the mouth. 7. The seventh order is called *Cetæ*, or the whale kind: these have no uniform character in their teeth, being very different in the different genera; but are sufficiently distinguished from the other orders of mammalia, by living in the ocean, having pectoral fins, and spiracles or nostrils upon the top of the head; so that by rising to the surface of the water, they take in air, and respire, without raising their heads out of water. The fat, or blubber, as it is called, of these animals, is entirely lodged on the surface of their bodies under the skin, serving as a warm covering, and preserving their heat, which the constant application of cold water would otherwise soon dissipate. The genera are the Monodon, Balæna, Physeter, and Delphinus. II. The second class is denominated AVES, or Birds; and the branch of science which considers and describes these animals, their natures and kinds, their forms, external and internal, and which teaches their economy and uses, is called *Ornithology*. [To the article ORNITHOLOGY we therefore refer for particulars.) III. The animals of the third class, called AMPHIBIA, are very remarkable, both for their external appearance, and internal conformation. They are oviparous, and differ from the viviparous quadrupeds, and also from birds, in the structure of the heart and lungs; they have the singular property of being able to suspend the function of respiration, and can perform it in a more arbitrary manner than other animals. The characteristic of this class being a peculiarity of internal organization, it is not at all surprising that the animals which it comprehends should agree more in certain propensities and habits than in external appearance: accordingly it contains some that resemble fishes, as the shark and the skate; and others that more nearly resemble quadrupeds, as the tortoise and crocodile; and some that in general appearance resemble no other class of animals, as snakes and serpents; many of which can move with equal ease on land or in water, though they have neither feet nor fins. The points of agreement in the whole class are entirely the consequence of the above stated peculiarity in the organs of respiration. Besides, all amphibious animals have a heart with only one ventricle, which organization is necessarily connected with the peculiarity of their breathing: and they are all remarkably tenacious of life. Amphibia have no grinders, but most of them sharp, pointed teeth, and their bodies either naked or scaly. They are oviparous, some of them depositing hard eggs, or eggs covered with a calcareous shell, as in birds; while others deposit soft eggs or spawn, either in the form of continued chains of eggs, or else in heaps or loose clusters. In several of the Amphibia, as in the Viper tribe, and in some Lizards, the eggs are hatched internally. The young of such as deposit hard or shelled eggs, are commonly produced in their perfect or complete form, differing from the parent animal in size alone: but the young of many of those which are produced from spawn or soft eggs, pass through a kind of tadpole state, as is the case with frogs, and appear for some time in a form very different from that which they afterwards assume. The whole class was formerly divided by Linnæus into four orders, but now forms only two, viz. *reptiles* and *serpents*. Among the former are the sea-tortoise or turtle; and the crocodile, being a species of the *lizard* genus, so fierce and formidable to other animals. Its usual food is fish, but when that fails, it attacks any animals, and even man. It is found in the Nile, the Niger, and in the Ganges. One of the most singular properties of serpents, is that of casting their skins; and so completely is this operation performed, that even the external coats of the eyes themselves make a part of the cast skin. IV. The fourth class is denominated PISCES, or Fishes; and the study of this branch of the science of Natural History is called *Ichthyology*. The heart of Fishes, like that of Amphibia, is unilocular, that is, it has but one chief cavity: their blood is of a less temperature than that of the higher order of animals, as quadrupeds and birds. Their organs of breathing, analogous to the lungs in quadrupeds, are distinguished by the name of gills; by means of which they probably derive support from the oxygen of air contained in the water, or have the means of decomposing the water, and thus exist by its oxygenous parts; so that the same process of nature, which in the higher orders of animals takes place in the internal cavity of the lungs, is brought about in fishes externally by means of the subdivided branching of their gills. We have now six orders under the class *Pisces* or fishes: four derived from the fishes whose muscles are supported by spines or bony substances, and denominated the *apodal*, the *thoracic*, the *jugular*, and the *abdominal*. This arrangement is founded on the absence of the ventral fin, as in the *Apodes;* or on its situation with regard to

the pectoral fins: and the other two are the *cartilaginous* fishes, subdivided into the *branchiostegous*, or those whose gills are destitute of bony rays; and the *chondropterygious*, or those with cartilaginous gills. 1. The fifth of the order *Apodes* are without ventral fins, as the eels, the conger, &c. 2. The order *Jugulares*, includes fish in which the ventral fins are placed before the pectoral, as in the cod-fish and blenny. 3. The *Thoracici*, in which the ventral fins are under the pectoral, as in the perch, mackarel, &c. 4. The *Abdominales*, in which the ventral fins are placed behind the pectoral, as in the salmon and pike. 5. The *Branchiostegous* order includes fishes that are destitute of bony rays, &c. 6. The *Chondropterygious* order consists of fishes destitute of bone altogether, and possessed of cartilage instead. Such are the orders. The generic character is taken from the shape of the body, covering, structure, figure, and parts of the head, but chiefly from the branchiostegous membrane. The specific character is taken from the cirri, jaws, fins, spines, lateral line, digitated appendages, tail, and colour. It may be observed, before we quit this class of animals, that the general form and structure are finely adapted to the peculiarity of the element in which they live. Being of themselves nearly of the same specific gravity as the water which they inhabit, their small fins are all that is requisite to enable them to move with ease, and steer their course with pleasure. V. The fifth class of animals in the Linnæan system contains INSECTS. The study of this branch of science is denominated ENTOMOLOGY; for the particulars of which we therefore refer to that article. VI. The last class of the animal kingdom, according to the Linnæan system, is denominated VERMES or *worms*. This class is not only arranged the last in order, but the creatures which it contains, when compared with those forming the other classes, seem to be the least perfect, possessing neither eyes, nor ears, nor head, nor feet. Many of them, as the corals and sponges, approach very near to vegetables; and others, as the madrepores and shell-fish, resemble, in their coverings at least, certain productions of the mineral kingdom. All, however, may, no doubt, be considered as perfectly complete, both in structure and endowments, for the station which they are designed to hold, and for the purposes which they are intended to answer in the general plan of creation. The class, notwithstanding its name, *Vermes*, or *worms*, includes a vast variety of very different animals, as snails, slugs, shells, and their inhabitants; corals; and an indefinite variety of microscopic animals, called *Infusoria*, from the circumstance of their being detected in waters, in which vegetable matter of some kind or other has been steeped. The different orders, which are five in number, are the following:—1. *Intestina:* this order includes worms with a filiform, or thread-like body, of equal thickness, and smooth; and also the common earth-worm, the worms found in the intestines of different animals, the leech, and a few others. 2. *Mollusca:* This order contains animals of a simple form, naked, that is, without a shell, with members, or additional parts, not to be found in those of the first order. These members, however, do not answer to the feet, or wings, or fins of quadrupeds, birds, or fishes. In some they are called rays, as in the asterias, or star-fish; in others, tentacula, or feelers, as in the sepia, or cuttle-fish; and in others, as in the limax, or slug, they are denominated horns. 3. The third order is named *Testacea*, or worms of a soft and simple form, covered with a shell. These are characterized by the shell or its calcareous covering, which each animal forms for itself by a concretion, or exudation, from the surface of the body. There are many different genera of shells; and the study of this order of the class Vermes has obtained a distinct scientific name, namely, *Conchology*. This branch of natural history is very popular, on account of the elegance and beauty of the shells, and of the easy method of arranging and preserving them. As a branch of science, the objects of conchology are separated into three divisions, namely, 1. *Multivalves*, that is, shells with many valves; as the *Chiton*, *Lepas*, and *Phloas*. 2. *Bivalves*, or shells with two valves; as, the *Ostrea*, oyster; *Mytilus*, mussel, &c. 3. *Univalves*, or shells with one valve only, which division is subdivided into those with a regular spire, as the *Argonauta*, the *Nautilus*, the *Helix* or snail, &c. 4. *Zoophyta*. This order comprehends composite animals efflorescing like vegetables, included in a calcareous crust. Many thousands of them live together, and are so connected both by their calcareous covering and their softer fleshy part, as to be considered as a single production. They increase in bulk, and mostly branch out like plants; and they may, like plants, be propagated by slips. We have already observed, that this order of animals constitutes a sort of connecting link between itself and the other two kingdoms of nature. It is separated into two divisions: 1. Those with a hard, calcareous stem, of which, among others, the madrepores and millepores are examples. 2. Those with a softer stem: this division includes ten genera; of which the sponge, the coralline, and polypus, are good examples. 5. *Infusoria* This order has been added to those of Linnæus, to include such microscopical worms as have been discovered in stagnant or other waters and fluids. The animals included in it are divided into, 1. Those that have external organs. 2. Those without external organs, and flattened: and, 3. Those without external organs, and round.——In conclusion, we beg to refer the reader to the different zoological articles interspersed throughout this volume, for the habits, properties, &c. of individuals in each class, as well as for numerous observations of a general nature, which it would be mere tautology to repeat.

ZO'OLITE, an animal substance petrified.

ZOOPHYTA, or ZOO'PHYTE. [See the article on Zoology.]

ZOON'OMY, the laws of animal life, or that science which treats of the phenomena of animal life, their causes, consequences, and relations.

ZOOPH'ORUS, in ancient architecture, a part between the architrave and cornice; corresponding with the frieze in modern architecture.

ZOOPHYTOL'OGY, the natural history of zoophytes.

ZOOT'OMY, comparative anatomy, or the science of dissecting the bodies of beasts; the anatomy of brute animals.

ZORILLE, in zoology, a species of *viverra*, or weasel, having the back and sides marked with stripes of black and white, the last tinged with yellow; the tail long and bushy, partly white, and partly black; the legs and belly black. This animal inhabits Peru, and other parts of South America; its pestilential vapour overcomes even the panther of America, and stupifies that formidable enemy.

ZU'MATE, in chemistry, a combination of the zumic acid, with a salifiable base.

ZU'MIC ACID, in chemistry, an acid procured from various acescent vegetable substances.

ZUMOL'OGY, a treatise on the fermentation of liquors, or the doctrine of fermentation.

ZUMOSIM'ETER, or ZYMOSIM'ETER, an instrument proposed by Swammerdam for ascertaining the degree of fermentation occasioned by the mixture of different liquids, and the degree of heat which they acquire in fermentation.

ZUR'LITE, a newly discovered and imperfectly described mineral, found in mount Vesuvius, with calcareous spar. It occurs in rectangular prisms, or in botryoidal masses, of a green colour. It yields to the knife, and melts with borax into a black glass.

ZYGODAC'TYLOUS, an epithet for an order of fowls which have the feet furnished with two toes before and two behind, as the parrot.

ZYGO'MA, in anatomy, a bone of the head, or rather a union or assemblage of two processes or eminences of bones; the one from the *os temporis*, the other from the *os male;* these processes are hence termed the *zygomatic processes*, and the suture that joins them together is denominated the *zygomatic suture*.

SUPPLEMENT.

ABATTOIR, the name given by the French to the public slaughter-houses established in Paris by a decree of Napoleon, in order that the cattle should not be driven through the capital, to the annoyance and danger of the inhabitants. These large building sconsist of slaughter-rooms, built of stone, with every arrangement for cleanliness, &c., and of ox and sheep pens.

ABI'ETINE, a resinous substance obtained from the Strasburgh turpentine.

AB'RAZITE, a mineral which occurs in the volcanic rocks of Capo di Bovo, near Rome.

ACAL'YCINE, having neither calyx nor flower-cup; a botanical term.

ACANTHOP'ODA, a tribe of coleopterous insects (beetles), remarkable for their broadish, flattened legs, armed exteriorly with spines.

ACCLI'MATISE, to accustom to the temperature of a foreign climate.

ACEPH'ALOUS, without a head.

ACEPH'ALA, a class of molluscous animals that have no apparent head, and of which the oyster is an example.

ACEPHALOPO'DIA, that species of partial agnesia in which the head and feet are wanting or defective.

A'CETONE, pyro-acetic spirit.

ACH'IRITE, a mineral consisting of oxide of copper, carbonate of lime, silica, and water.

AC'MITE, a mineral of a brownish black colour, opaque and brittle. It is found in Norway, imbedded in granite.

ACON'ITINE, the narcotic principle of the *aconite*. It combines with the acids, and forms uncrystallizable salts.

A'CROPY, imperfect articulation.

ACRO'MIAL, pertaining to the humeral extremity of the shoulder-blade.

ADENAL'GIA, a pain seated in a gland.

ADEN'IFORM, of a gland-like shape.

ADIAPNEU'STIA, diminution or obstruction of perspiration.

ADIARRHŒ'A, suppression of any of the natural evacuations.

ADULA'RIA, moonstone; a transparent white coloured variety of prismatic felspar, with a pearly opalescence.

ADVERSIFO'LIATE, a botanical term denoting that the leaves are arranged opposite each other on the same stem.

AER'IIDES, air plants; a genus of perennials, natives of China and the East Indies.

ÆSTHET'ICS, the power of perception through the medium of the senses. In the *fine arts* it denotes the science which derives the first principles in all the arts from the effects which certain combinations have on the mind, and links together with feeling the different parts of a composition.

AGENA'SIA, any anomaly of organization, consisting in absence or imperfect development of the parts.

ANÆSTHE'SIA, a state of insensibility to pain in surgical operations, &c., superinduced by the inhalation of certain compound chemical bodies, viz. nitrous oxide, sulphuric ether, and chloroform or perchloride of formyle. These agents are entirely different from each other in their chemical constitution; hence their elementary composition affords no apparent clue to the explanation of their anæsthetic properties.

ALA'LIA, defect of articulation.

ALDINE EDITIONS, those editions of the Greek and Roman classics which were printed by the family of Aldus Manutius, first established at Venice about 1490.

AL'IPED, any animal whose toes are connected by a membrane, and which serve for wings; as in the *bat*.

AL'KALOID, a substance possessing some of the properties of an alkali.

ALMAN'DINE, a beautiful red-coloured mineral, usually termed *precious garnet*.

ALVE'OLITE, a marine fossil, occurring in the Portland stone, composed of numerous concentric beds, each formed by the union of hemispherical cells.

AL'VINE, appertaining to intestinal excretions.

AM'ADOU, a species of agaric, found in the trunks of old trees, which when boiled in water, dried, beaten with a mallet, and finally impregnated with a solution of nitre and dried, constitutes an inflammable material known as *pyrotechnic sponge*, or *German tinder*.

AM'BREINE, a fragrant substance extracted from ambergris, by digestion with alcohol. Ambreic acid is produced by heating this substance with *nitric acid*.

AM'IDINE, the soluble basis of starch.

ANAN'DROUS, plants whose flowers are destitute of stamens; thence called female flowers.

ANASTOMO'SIS, inosculation: applied to the opening of one vessel into another, as arteries, veins, and lymphatics, in the animal body.

ANDROPET'ALOUS, a term used to describe double flowers, which are produced by the conversion of the stamens into petals, as is exemplified in most double flowers.

ANE'SIS, remission or diminution of the symptoms that mark any disease.

ANGIOCAR'POUS, a term applied to seed-vessels which are enclosed in a covering that does not form part of themselves; as the filbert, &c.

ANHELA'TION, difficult respiration, with a sense of suffocation.

ANONA'CEÆ, an extensive natural order of ever-green, exogenous plants, trees, and shrubs, whose fruit is sometimes edible.

ANTIHE'LIX, the inward protuberance of the external ear, being a semicircle within, and almost parallel to the helix.

ANTHERO"GENOUS, an epithet employed when in double flowers the anthers are converted into horn-like petals.

ANTIENNEAHE'DRAL, a term used in crystallography, to denote that the crystal has nine faces on two opposite sides.

ANTIGYM'IC, a term applied to whatever prevents fermentation.

AN'TIQUATED (in conchology), longitudinally furrowed, but interrupted by transverse furrows, as if the shell had acquired new growth at each furrow.

APA'GYNUS, a term applied to plants that fructify only once, and perish immediately after they flower.

APER'TOR OC'ULI, the muscle which raises the upper eye-lid.

APHLOGIS'TIC, not inflammable. An *aphlogistic lamp* is one in which a coil of platinum wire is kept in a state of ignition by vapour of alcohol or ether, without flame.

APLO'ME, a mineral of a deep orange colour, usually regarded as a variety of garnet. It is found in Siberia and New Holland.

AP'PANAGE, lands appropriated by the sovereign to the younger sons of the family as their patrimony, the reversion being reserved to the crown on failure of male heirs.

ARBORE'TUM, a place in parks, pleasure-grounds, gardens, or nurseries, in which a collection of different species of trees is cultivated.

AR'BORICULTURE, the art of cultivating trees and shrubs grown for timber, or for ornamental purposes.

ARGOL, or ARGAL, crude tartar, which when purified is called *cream of tartar*.

ARTHRODYN'IC, pertaining to rheumatic and other painful affections of the joints.

ASTHENOL'OGY, the doctrine of diseases arising from debility.

ATAC'AMITE, a native muriate of copper found in alluvial sand in a river of Peru, and named *prismatoidal green malachite*.

AT'ROPINE, a highly poisonous, though tasteless, vegetable salt, obtained from the *Atropa belladonna*.

AU'ROCHS, a name given to the ure-ox, an animal of the bovine kind existing in Lithuania, and also found fossil in alluvion.

AUTOM'ALITE, in mineralogy, a variety of corundrum containing oxide of zinc and alumina. It is sometimes called *fahlunite*.

AXOT'OMOUS, a mineralogical term, signifying cleavable in one particular direction.

BALL-COCK, a hollow globe of metal attached to the end of a lever which turns the stop-cock of a cistern pipe, by floating on the surface of the water, thereby regulating the supply.

BAR'BELLATE, a term used when the pappus of composite plants is bearded by short, stiff, straight bristles.

BARBET'TE [Fr.], a breastwork of a fortification, from which the cannon may be fired over the parapet.

BASIS'OLUTE, a term applied to leaves prolonged at the base below the point of origin.

BAT'TUE, in sporting, the surrounding a portion of a forest, wood, or park, and, by beating the bushes and shouting, endeavouring to bring out the animals intended for the chase.

BET'ULINE, a vegetable principle obtained from the bark of the birch tree (*Betula alba*). It is of a white colour, very light, and crystallizes in the form of long needles.

BIARSEN'IATE, a salt in which there are two primes of the arsenic acid to one of the base.

BIARTIC'ULATE, consisting of but two joints; applied to the antennæ and abdomen of insects.

BIBLOMA'NIA, literally, book-madness; a disease which manifests itself in an over anxiety to obtain old and scarce editions of books, without much regard to the value of their contents.

BI-HYDRO-CARBON, carburetted hydrogen, or olefiant gas.

BILACIN'IATE, a term in botany, applied to a leaf when the margin is cut into two segments.

BILAM'ELLATE, a term in botany, used to denote that the part is of the form of a flattened sphere longitudinally bifid.

BIO'CELLATE, an entomological term used when the wing of an insect is marked with two eye-like spots.

BIPU'PILLATE, a term in entomology, applied to an eye-like spot on the wing of a butterfly, having two dots or pupils within it of a different colour.

BITER'NATE, a botanical term applied to compound leaves, when the common footstalk supports three secondary petioles on its apex, and each of them bears three leaflets.

BOG-ORE, oxide of iron sometimes found at the bottom of peat mosses, and probably derived from the decayed vegetables, of which most of the moss is composed.

BOM'BAX, the silk cotton-tree, a genus of arborescent plants, of several species, natives of hot climates.

BO'RON, the basis of boracic acid.

BOY'AU, in fortification, a ditch covered with a parapet, serving as a communication between two branches.

BRONCOPH'ONY, the sound of the voice as heard by applying the stethoscope over a large bronchial tube.

BRU'CITE, a mineral of a pale brown colour; called also *chondrodite* and *hemiprismatic chrysolite*. It consists chiefly of magnesia and silica, coloured with oxide of iron.

BURGOU'T [Fr.], a dish much cooked at sea. It consists of groats boiled in water till they burst, with a little butter.

BU'RIN [Fr.], an instrument of tempered steel used for engraving on copper, &c. One end is ground off obliquely so as to produce a point, and the other inserted in a short wooden handle.

BUSH'MEN, a name given by the Dutch colonists to some roaming tribes akin to to the Hottentots, in the vicinity of the Cape of Good Hope.

BUST-TURNING-MACHINE. It is said that Mr. J. Blanchard, of Boston, U.S., has invented a piece of mechanism by

which nature, art, everything tangible, can be copied, with a precision which defies the chisel, even when guided by the most skilful hand, and directed by the most gifted talent. The machine, too, can be graduated so as to give reduced copies of any statuary; which shall, in their miniature, be perfect and exact copies of the originals in everything else but the size,—preserving every line, furrow, and dimple, and giving prominence to muscles and veins, and every particular lineament and feature, in exact proportion. By the same machinery, the most correct perfect bas-relief profile likenesses may be cut, on the hardest material and of any size required, from half an inch, to full life-like size.

BU'TYRINE, a substance which exists in butter (*butyrum*), combined with oleine, stearine, and a very small quantity of butyric acid.

CALCAI'RE GROSSIER [Fr.], a coarse limestone often passing into sand, and abounding in marine shells; it belongs to the eocene tertiary period.

CALCAI'RE SILICIEUX [Fr.], a compact silicious limestone, belonging, like the calcaire grossier, to the eocene tertiary period.

CAMARIL'LA [Sp.], the private chamber of the sovereign of Spain. The term is generally applied to his or her immediate confidants, and is then synonymous with *clique*.

CAMPES'TRAL, pertaining to the open fields: applied as the specific name of many plants.

CAM'PHINE, a hydro-carbon, identical with pure oil of turpentine.

CARPOL'OGY, that branch of botany which treats of fruits.

CAR'SOETYPE, a machine, invented by Mr. Kingston, for taking portraits with great accuracy, and in an extremely short space of time. The portrait, in its shadowings, is afterwards completed by art on a ground of marble.

CA'SEUM, the purified curd of milk; the basis of cheese.

CASH'MERE, a delicate kind of woollen fabric manufactured from the downy wool found about the roots of the hair of the Thibet goat. The fine *shawls* made of this material were first imported from the kingdom of Cashmere, but they are now well imitated in this country and France.

CATACAUS'TICS, in optics or geometry, the *caustic* curves formed by the reflection of light, in contradistinction to *diacaustic* curves, which are formed by refraction.

CATALOGUE RAISONNE'E, a catalogue of books classed under heads and particularly described.

CATHAR'TINE, a substance of a reddish colour and nauseous bitter taste, obtained from the leaves of senna.

CATH'ODE, the surface at which electricity passes out of a body, supposing the current to move in the apparent direction of the sun.

CER'ATRIN, the bitter principle of Iceland moss.

CES'PITOSE, in botany, *cespitose plants* are such as produce many stems from one root, and which have all their leaves radical, so as to resemble turfs.

CHARTA'CEOUS, a botanical term designating the paper-like texture of most leaves.

CHLO'RAL, a new chemical substance, described by Liebig, consisting of chlorine, carbon, and oxygen. It is a limpid, colourless liquid, similar in odour and appearance to the oily fluid which chlorine forms with olefiant gas; but differs from it essentially in density and volatility.

CHLO'ROFORM [called also *Chloroformyle*, or the *Perchloride of Formyle*], a new anæsthetic agent, discovered by Dr. Simpson, of Edinburgh, and used as a substitute for sulphuric ether in surgery and midwifery. Its constituents are two atoms of carbon, one of hydrogen, and three of chlorine. It is a dense, limpid, colourless liquid, readily evaporating, and possessing an agreeable, fragrant, fruit-like odour, and a saccharine pleasant taste. As an inhaled anæsthetic agent it is said to possess over sulphuric ether the following advantages:—1. A greatly less quantity of chloroform than of ether is requisite to produce the anæsthetic effect. 2. Its action is much more rapid and complete, and generally more persistent. 3. The inhalation and influence of chloroform are far more agreeable and pleasant than those of ether. 4. Its perfume is not unpleasant; nor does it exhale in a disagreeable form from the lungs of the patient, as so generally happens from the use of sulphuric ether. 5. Being required in much less quantity, it is much more portable and transmissible than sulphuric ether. 6. No special kind of inhaler or instrument is necessary for its exhibition. A little of the liquid diffused upon the interior of a hollow-shaped sponge, or on a pocket-handkerchief, or a piece of linen or paper, or held over the mouth and nostrils so as to be fully inhaled, generally suffices in about a minute or two to produce the desired effect.

Chloroform may be made and obtained artificially by various processes,—as by making milk of lime, or an aqueous solution of caustic alkali act upon chloral;—by distilling alcohol, pyroxylic spirit, or acetone, with chloride of lime;—by leading a stream of chlorine gas into a solution of caustic potass in spirit of wine, &c. It was discovered and described by Soubeiran, in 1831; and its composition was first accurately ascertained by the distinguished French chemist Dumas, in 1834; but no person (as far as Dr. Simpson was aware) had used it by inhalation, or discovered its remarkable anæsthetic properties, till the date of his own experiments.

At a meeting of the Medical Society of London, Dec. 6. 1847, Dr. Cogswell read the following interesting account of the *History of Chloroform, and its use as an Anæsthetic Agent*—"However Dr. Simpson's claim may be decided upon as to the priority of administering chloroform vapour, (and it now appears the honour is contested by some person or persons alluded to by Mr. Bell, with regard to the human subject, and by Mr. Flourens who tried it on an animal,) he is certainly entitled to the credit of giving it a world-wide reputation. From the historical references of

Dr. Pereira, in the *Pharmaceutical Journal* lately republished in the *Medical Gazette*, it would appear that chloroform was obtained by Mr. Samuel Guthrie, of Sacket's Harbour, New York, by distilling a mixture of chloride of lime and alcohol. He supposed, however, that he had only procured chloride of olefiant gas, or chloride of ether, by a new process. His communication in *Silliman's American Journal of Science and Art* for January, 1832, is entitled, a 'New Mode of preparing a Spirituous Solution of Caloric Ether;' and he proceeds to state, that he had used the product very freely during the previous six months to the point of intoxication; that he had found it singularly grateful, producing promptly a lively flow of animal spirits and consequent loquacity, and leaving little of the depression consequent on the use of ardent spirits; that it promises much as a remedy in cases requiring a safe, quick, energetic and palatable stimulus, and that for drinking it requires an equal weight of water. Subsequently, Dr. J. Black, of Bolton, in the *Medical Gazette* of September, 1833, has an article on the same chemical product, headed 'Chloric Ether; New Remedy in Spasmodic Asthma.' He calls this ether a solution of chloride of carbon in alcohol; mentions it as 'brought into use by our American brethren;' considers it a most agreeable and diffusive cordial, and likely to be of service in spasmodic and adynamic states; and adds, 'I have used it frequently in doses of about half a drachm, according to its strength, and from my short experience I am disposed to think it will be of more positive benefit than any of the muriatic or sulphuric ethers.' For this reference I am likewise indebted to Dr. Pereira. Following the same authority, we find that, about the same time as Mr. Guthrie, M. Soubeiran also distilled a mixture of alcohol and chloride of lime, and after a somewhat erroneous analysis, named the product bichloric ether. A division of his paper in the *Annales de Chimie et de Physique* for 1831, on the combinations of chlorine, is headed, 'Action du Chlore du Chaux sur l'Alcohol.' Next Liebig examined the product, and finding no hydrogen, termed it chloride of carbon. Thus far its real composition remained unascertained.

"In 1834 M. Dumas determined its true elementary constitution, and gave it the name of Chloroform, which, together with that of Perchloride of Formyle, since proproposed by Liebig, it continues to bear almost indifferently. In 1842, Dr. Glover, of Newcastle, (a corresponding member of this society, and author of its Fothergillian prize essay on scrophula,) published in the *Edinburgh Medical and Surgical Journal* an essay on bromine and its compounds, which had gained him the Harveian prize of Edinburgh. A chapter of this publication treats of the 'physiological properties of the bromide and chloride of olefiant gas, of bromoform, chloroform, and iodoform.' In a similar essay of mine some years before, on iodine and its compounds, I had remarked, that whereas the physiological action of the metallic compounds is characterised sometimes by the predominance of one element, sometimes of the other, the sesqui-iodide of carbon, as it was called (iodoform), seems to throw off all connexion with the group, and by its singular action on the nervous system allies itself to certain organic agents, such as strychnine and brucine. Struck with this result, as he has stated, Dr. Glover examined the action of the other bodies just named, using chloroform particularly as the most characteristic, and noticed, among other effects, that the lungs become congested, and the spinal cord loses its sensibility, under the influence of this class of poisons. He suggested, however, that their 'properties were not unlikely to be beneficial in the treatment of disease.' There is nothing obscure or hesitating in Dr. Glover's conclusions, which were prominently put forward in the press. He used the liquid chloroform by injection into the stomach, the blood vessels, and the peritonæal cavity.

"The employment of chloroform in the form of vapour is mentioned in the *Pharmaceutical Journal* for Febuary, 1847, where the editor, in a note to a communication 'On the Inhalation of the Vapour of (Sulphuric) Ether,' says 'Chloric ether has been tried in some cases with success; it is more pleasant to the taste, but appears to be rather less powerful in its effects than sulphuric ether.' There is nothing in the journal itself to denote that this chloric ether was chloroform, or that the experimentalist was Mr. Bell himself, but we are assured of both facts by a competent authority in the *Medical Gazette*. Subsequently, M. Flourens caused an animal to respire the vapour of chloroform, so that it became unconscious of pain under a severe vivisection. I have reason to know that Dr. Pereira has been in the frequent habit of using chloroform medicinally, both in hospital and in private practice, for several years past."

Many able treatises and essays from the pens of eminent practitioners have recently appeared (in the *Lancet*, *Medical Gazette*, &c.) on the use of ether and chloroform in surgery and midwifery; and the results of many experiments on the effects produced in men and animals by the use of both these compounds. It is not necessary, however, for us to enter into details on that subject, but shall content ourselves with quoting Dr. Simpson's concluding observations on the important question, whether it is right for the physician to interfere with the fearful sufferings and agonies which "flesh is heir to," in order to save and shield his patients from the endurance of them. After arguing the subject from data afforded by the hospitals, which showed that fewer persons died who had the larger amputations performed on them during the current year, while under etherisation, or in an anæsthetic state, than in any preceding year when this use of chloroform and ether was unpractised and unknown, — he says, "Judging from analogy, and from what is the fact in surgery, I believe that, as a counteraction to the influence of pain, the state of artificial anæsthesia does not only imply a saving of human suffering, but a saving also of human life." . . .

"I repeat, that the condition of anæsthesia not only actually preserves the patient in surgical practice from agony and torture, but actually preserves him too from the chances of danger and death. And I firmly believe, that the superinduction of anæsthesia in obstetric practice will yet be found to diminish and remove the perils, as well as the pains of labour."

CHOLES'TERIC ACID, a peculiar acid formed from *cholesterine* and *nitric acid*. It is in crystals of a yellowish white colour, scarcely soluble in water, but perfectly so in boiling alcohol.

CHOLES'TERINE, a pearly substance found abundantly in human biliary calculi.

CHONDROL'OGY, a description of the cartilages of the human body.

CHORE'A, a disease which manifests itself in convulsive motions of the limbs, and is commonly called St. Vitus's dance.

CICERO'NE [Ital.], any individual who acts as a *guide*.

CIL'ERY, in architecture, ornaments of foliage and drapery on the heads of columns.

CLINK'STONE, Phonolite; a kind of felspathic rock, which yields a metallic sound when struck.

CLINOM'ETER, an instrument for measuring the dip of mineral strata.

CLUNCH, the name given to an indurate clay found dividing the coal-seams.

COAG'ULUM, the tenacious substance formed from a fluid by coagulation.

CONCERTAN'TE [Ital.], those parts of a musical composition, which continue throughout the piece.

CONCET'TI [Ital.], ingenious but misplaced thoughts or terms of expression.

COUN'TERSINK, to make a cavity in timber-work for the reception of a plate of iron, or the head of a screw or bolt.

COV'IN, in law, a collusive agreement between two or more to the prejudice of a third person.

CRORE, in commerce, a hundred lacs of rupees.

CROTON'IC ACID, an acid obtained from croton oil.

CYANOM'ETER, an instrument contrived by Saussure for determining the deepness of the tint of the atmosphere.

CYT'ISINE, a bitter, nauseous, and poisonous principle, detected in the seeds of the *Cytisus laburnum*.

DA'MAR, a kind of resin or indurate pitch, exuding spontaneously from various trees, indigenous to most of the Indian islands. There are several sorts, and among them one which is in common use, called *damar-pitch*, or white resin.

DEBA'CLE [Fr.], a geological term, to designate a violent rush of waters, which, overcoming all opposing barriers, carries with it stones, rocks, &c., and spreads them in all directions.

DECARBONIZA'TION (of cast-iron), a process resorted to in order to convert cast-iron into steel and malleable iron.

DECOM'POSITE, a botanical term applied to leaves of plants, when the primary leaf is so divided that each part forms a compound leaf; and to flowers which contain within a common calyx several that are smaller.

DER'MATOID or DER'MOID, resembling skin.

DERMATOL'OGY or DERMOL'OGY, a discourse or treatise of the skin.

DERMOG'RAPHY, the anatomical description of the skin.

DIACRIT'IC (MARKS), marks used to distinguish letters, between the forms of which much similarity exists.

DIATH'ESIS, a natural predisposition to certain diseases.

DICH'ROISM, a property of certain crystallized bodies, of appearing under two distinct colours, according to the direction in which the light is transmitted through them.

DI'GITALINE, a powerful poison, derived from the *digitalis purpurea*, or foxglove.

DOLAB'RIFORM, hatchet-shaped. In botany, applied to leaves which are cylindrical at the base, grow broader at the upper part, and are thick on one edge and very thin on the other.

EISTEDD'FOD (from the Welsh *eistedd*, to sit). The assemblies of the Welsh bards.

E'LAINE OR O'LEINE, the oily principle of fatty substances, which may be expelled by pressure, or by digesting the fat in boiling alcohol; as it cools, the stearine precipitates, and the elaine collects upon the surface of the supernatant liquor.

ELATE'RITE, a bituminous mineral, brown, massive, and elastic; it is sometimes termed *mineral caoutchouc*.

ELECTRIC TEL'EGRAPH. At the late meeting of the British Association, the learned chairman, Sir R. H. Inglis, thus adverted to the progress of the Electric Telegraph, from a report presented to the Legislative Council and Assembly of New Brunswick, relative to a project for constructing a railway, and with it a line of electro-magnetic telegraph, from Halifax to Quebec: —

"The system," said Sir R. H. Inglis, "is daily extending. It was, however, in the United States of America that it was first adopted on a great scale, by Prof. Morse, in 1844; and it is there that it is now already developed most extensively. Lines for above 1,300 miles are in action, and connect those States with Her Majesty's Canadian provinces; and it is in a course of development so rapid, that, in the words of the report of Mr. Wilkinson to my distinguished friend, his Excellency Sir W. E. Colebrooke, the Governor of New Brunswick, to which I have just adverted, 'No schedule of telegraphic lines can now be relied upon for a month in succession, as hundreds of miles may be added in that space of time. So easy of attainment does such a result appear to be, and so lively is the interest felt in its accomplishment, that it is scarcely doubtful that the whole of the populous parts of the United States will, within two or three years, be covered with a network like a spider's web, suspending its principal threads upon important points along the sea-board of the Atlantic on one side, and upon similar points along the lake frontier on the other.' I am indebted to the same report for another fact, which I think the Association will regard with equal interest: 'The confidence in

the efficiency of telegraphic communication has now become so established, that the most important commercial transactions daily transpire, by its means, between correspondents several hundred miles apart. Ocular evidence of this was afforded me by a communication a few minutes old between a merchant in Toronto and his correspondent in New York, distant about 632 miles.' I am anxious to call your attention to the advantages which other classes also may experience from this mode of communication, as I find it in the same report. When the Hibernia steamer arrived in Boston, in January 1847, with the news of the scarcity in Great Britain, Ireland, and other parts of Europe, and with heavy orders for agricultural produce, the farmers, in the interior of the States of New York, —informed of the state of things by the Magnetic Telegraph — were thronging the streets of Albany with innumerable teamloads of grain almost as quickly after the arrival of the steamer at Boston as the news of that arrival could ordinarily have reached them. I may add, that irrespectively of all its advantages to the general community, the system appears to give already a fair return of interest to the individuals or companies who have invested their capital in its application."

Prof. Morse states, as the result of improvements in this Telegraph, the President's message, entire, on the subject of the war with Mexico, was transmitted with perfect accuracy at the rate of 99 letters per minute. His skilful operators in Washington and Baltimore printed these characters at the rate of 98, 101, 111, and one of them actually printed 117 letters per minute. He must be an expert penman who can write legibly more than 100 letters per minute; consequently, this mode of communication equals, or nearly equals, *the most expeditious mode of recording thought.*

EM'ISSORY (DUCTS), those ducts which convey fluids out of the body to certain veins.

ENDO"GENOUS, an epithet for plants, the growth of whose stems takes place by additions from within, opposed to *exogenous.*

E'OCENE, a geological term, designating one of the marine formations of the tertiary series. There are four terms — *Eocene, Miocene, Older Pliocene,* and *Newer Pliocene,* — founded on the proportions which their fossil shells bear to marine shells of existing species; in the Eocene these are less numerous than in any of the others, and are thereby considered to indicate the commencement of the existing state of animate creation.

EP'IGENE, a term applied to forms of crystals not natural to the substances in which they are found.

EP'IGRAPH, an inscription on a monument, explanatory of its object, destination, &c.

ESCAPA'DE, unconscious impropriety of speech or behaviour.

ETHER, *as a means for rendering surgical operations painless.* — In the first week of January 1847, the first experiment was made in England, of employing the *inhalation of the vapour of Sulphuric Ether* as a means of rendering surgical operations painless. The application is of American origin, and was first introduced, a few months previously, by Dr. Morton, a dentist, of Boston, U.S., by whom it was communicated to Dr. Boot, of Gower Street. By this gentleman this discovery was described on the 17th of December, to Mr. Robinson, the surgeon-dentist, also of Gower Street; who, on the following day, operated upon a young lady thrown into sleep by the inhalation, during which a molar tooth was extracted from her lower jaw. The inhalation occupied a minute and a half, and the patient's recovery from sleep another minute. Dr. Boot questioned her respecting the tooth, and she expressed her great surprise at finding that it was removed. She said that all she had felt was merely a sensation of cold around the tooth, a sensation which was caused, perhaps, by the coldness of the extracting instrument. The full effect of the vapour is produced in from one to two or three minutes generally, and as soon as it is perceived, the operation is performed. The use of sulphuric ether, however, as an *anæsthetic agent,* has since been in a measure superseded by *Chloroform.*

EXO"GENOUS, a botanical term applied to plants which increase by successive external additions of their wood, in contradistinction to *endogenous.*

EX'OSMOSE, a term denoting the passage outward from within, of gases, &c., through porous membranes.

FAU'NA, a general term by which the whole of the animals peculiar to a country are designated.

FLO'RA, the term used to designate the plants which are peculiar to a country.

FRIGIDA'RIUM, in ancient architecture, the apartment in which the cold bath stood.

FUE'ROS, the term by which in Spain the peculiar privileges of certain provinces are distinguished.

FUT'TOCKS (corrupted from *foot-hooks*), in naval architecture, the lower timbers raised over the keel that hold the ship together. The small shrouds in a ship's rigging, passing from the mainmast, foremast, and mizenmast shrouds, to those of the topmast, are always termed *futtock shrouds.*

FORMYLE, a chemical compound, the hypothetical radical of *formic acid,* first discovered in the red ant (*formica rufa*), and hence named. It is now obtained from starch, sugar, and, indeed, from most other vegetable substances.

GASTRO-ENTERI'TIS, inflammation of the stomach and intestines.

GEMMA'CEOUS, a botanical term applied to a flower stalk which grows out of a leaf bud.

GEMMIP'AROUS, an epithet applied to plants and animals, which can be propagated by shoots, as most of the *polypi.*

GERMAN SILVER, an alloy of nickel, zinc, and copper. It is sometimes called *white copper.*

GHAUT, a pass through a mountain; in the East Indies the word is used to denote any extensive chain of hills.

GHEE, a liquid butter, made in the East Indies from the milk of buffaloes.

GLAU'COUS, of a gray bluish colour; applied to leaves, &c. of plants which are covered with a fine sea-green mealiness, as seen on the underside of cabbage-leaves, &c.

GLYCYR'RHIZINE, the saccharine juice of liquorice.

GONIOMET'RICON, an instrument to enable persons unskilled in drawing to find the perspective direction of the vanishing or receding lines of objects. The mode of using the instrument is thus described by Mr. Earl: —Place the instrument between the eye and the object to be outlined, which is done by holding it with the finger and thumb of the left hand, at a point between the top of the arc and the universal joint. It is then fixed in that position at an angle of 60 degrees with the line of vision; a task accomplished by taking a small ivory acorn attached to the instrument by a string, and placing it firmly between the teeth, when the connecting string is stretched to its fullest tension. This done, the instrument is moved till one of the indicators coincides with the line whose downward or upward direction it is sought to ascertain. That point discovered, the instrument is laid flat on the drawing-paper with the horizontal bar parallel with its lower line, and gently moved to the required position, when the line of direction is ruled off from the edge of the indicator. The bottom of the instrument is set with divisional points, to assist in sketching the proportions of figures, trees, and objects of irregular form or outline.

GUILLOCHE (Fr.), in architecture, an ornament composed of continuous curved fillets.

GUN COTTON, an explosive compound of vegetable origin, combined with certain acids; it is applicable to mining purposes and to projectiles, and is proposed as a substitute for gunpowder. The best cotton for the purpose is said to be that which is freed from extraneous matters; and it is desirable to operate on the clean fibres in a dry state. The acids are, nitric acid of from 1·45 to 1·50 specific gravity, and sulphuric acid of 1·85 specific gravity. The acids are mixed together in the proportion of one measure of nitric acid to three measures of sulphuric acid, in any suitable or convenient vessel not liable to be affected by the acids. A great degree of heat being generated by the mixture, it is left to cool until its temperature fall 60 or 50 degrees Fahr. The cotton is then immersed in it; and, in order that it may become thoroughly impregnated or saturated with the acids, it is stirred with a rod of glass or other material not affected by the acids. The cotton should be introduced in as open a state as practicable. The acids are then poured or drawn off, and the cotton gently pressed by a presser of glazed earthenware to press out the acids, after which it is covered up in the vessel, and allowed to stand for about an hour. It is subsequently washed in a continuous flow of water, until the presence of the acids is not indicated by the ordinary test of litmus paper. To remove any uncombined portions of the acids which may remain after the cleansing process, the patentee dips the cotton in a weak solution of carbonate of potash, composed of one ounce of carbonate of potash to one gallon of water, and partially dries it by pressing, as before. The cotton is then highly explosive, and may be used in that state; but, to increase its explosive power, it is dipped in a weak solution of nitrate of potash, and, lastly, dried in a room heated by hot air or steam to about 150 degrees Fahr.

Advantages and Disadvantages of Gun-Cotton in Fire-arms.—These have been thus summed up by Professor Brande, in a paper read by him to the Royal Institution. The disadvantages are:—that the effects are less regular than those of gunpowder; that it is more dangerous, because inflaming at a lower temperature; that it does not take fire when compressed in tubes; that it burns slowly in all kinds of cartridges; that guns and pistols must be altered to admit of its use; that it is not adapted for the use of the army; that the barrel of the gun is moistened by the water produced during combustion. The advantages, on the other hand, may be stated as follows:—its extreme cleanliness, leaving no residue after combustion; its freedom from all bad smell; the facility and the safety of its preparation; the possessing treble the force of gunpowder; its explosion producing no smoke and less noise than that of gunpowder; its filamentary nature admitting of its being used overhead in mining operations; its not being liable (as a granulated substance is) to the accidents of leakage; its occasioning very little recoil. —*Athenæum.*

GUR'RY, a native fortification in India, generally consisting of a wall flanked with towers.

GUTTA PER'CHA, a vegetable substance derived from the sap and milky juice of a tree belonging to the natural order *Sapotaceæ*, found in abundance in the island of Singapore, and in some dense forests at the extremity of the Malayan peninsula. The tree attains a considerable size, even as large as six feet in diameter; is plentiful in Sarawak, and most probably all over the island of Borneo. The timber is too loose and open for building purposes; but the tree bears a fruit which yields a concrete oil, used for food. Gutta Percha quickly coagulates on exposure to the air. For collecting the sap the trees are felled, barked, and left dry and useless: from twenty to thirty pounds is the average produce of one tree; but so great is the demand for the article, that the forests will soon be cleared of the Gutta trees; whereas, it is believed that a constant and moderate supply might be secured by incisions in the bark, as in the case of caoutchouc. The Gutta is received in scraps, or in rolls of thin layers. It is first freed from impurities by devilling or kneading in hot water, when it is left soft and plastic, and of a whitish grey colour. When thus prepared, the Gutta has many curious properties. Below the temperature of 50 deg. it is as hard as wood, but it will soon receive an indentation from the finger-nail. When softened in hot water, it may easily

be cut and moulded; and it will harden as it cools, to its former rigidity; and it may be softened and hardened any number of times without injury to the material. Unlike caoutchouc, it has little elasticity; but it has such tenacity, that a slip, one-eighth of an inch substance, sustained 42 lbs. weight, and only broke with a pressure of 56 lbs. When drawn out, it remains without contracting. It seems indeed, likely, at no distant day, to supersede the use of caoutchouc in many articles of manufacture, and to be applied to many more for which caoutchouc is wholly unsuitable. Like caoutchouc, it is of a strongly adhesive or agglutinating quality, and perfectly repellent of water; but it is advantageously distinguished from it in being entirely free from stickiness when dry, in being nearly inodorous, in resisting the action of grease and oil, in mixing readily with paints, pigments, and other colouring matters; and, above all, in becoming, *by mere immersion in warm water*, so soft and ductile, that it may without further treatment be kneaded, or moulded, or rolled out, or pressed into any desired shape, or even spun into thread! It may be sulphurized, too, like caoutchouc, and rendered thereby equally proof against all variations of temperature. In solution, Gutta Percha is applied for water-proofing cloth. It is likewise used in numerous purposes for which leather is used, in mastics and cements, &c.; in short, it promises to become as important an article of commerce as caoutchouc itself.

HEIGHTS. — *To obtain heights of buildings which cannot be measured.*—Take any two rods of unequal length, place the short rod at any convenient distance from the building, and the long rod at such a distance from it, that looking over the short rod to the top of the building, the top of the long rod shall cut that sight. Then say, as the distance between the rods is to the height of the long rod over the short one, so is the distance of the long rod from the building to the height of the building; to which result add the short rod, and you will have the height of the building. — *The Builder.*

HEMIG'AMOUS, a term in botany, employed when of two florets on the same spikelet one is neuter, and the other unisexual.

HETEROCEP'HALOUS, a term applied to flowers, when in the same individual, the heads of some flowers are male, and others female.

HETEROCHRO'MOUS, a term applied to a flower head, when the colours of the florets are different.

HETEROG'AMOUS, in composite plants, when the florets are of different sexes in the head.

HETEROM'EROUS, when one leg has a different structure from another.

HIP'PURITES, a genus of fossil bivalve shells, of a conical shape, some of which have been found in chalk.

HOMOCHRO'MOUS, a botanical term, denoting that the florets in the same flower-head are of the same colour.

HUM'BOLDITE, a rare mineral, named in honour of Humboldt. It occurs in small and nearly colourless crystals, irregularly aggregated, and apparently containing the same elements as *datholite.*

HYDROBROM'IC ACID, an acid composed of equal volumes of hydrogen and bromine.

HYGE'INISM, a much abused term, but which, properly used, means the right application of medical science to the preservation or restoration of health.

HYLOXO'ISM, the doctrine that matter lives.

HY'PERTROPHY, a morbid increase in any organ, without change in the nature of its substances.

INTEROS'SEOUS MUSCLES, the small muscles between the bones of the hand and foot, for moving the fingers and toes.

INTERSCEN'DENT, an algebraic term, expressive of quantities, the exponents of whose powers are irrational. They are a mean, as it were, between algebraic and transcendental quantities.

ISOTH'ERAL, a term applied to those lines drawn on a map through places having the same *summer* temperature.

ISOTHER'MAL, having equal temperature. *Isothermal lines* are those drawn on a map through places having the same annual mean temperature. These lines are grouped by geographers into zones or bands, to avoid confusion, and called *isothermal zones.*

KI'NIC ACID, sometimes called CINCHO'NIC ACID, being obtained from the cinchona bark. It forms salts called *kinates.*

LAB'RADORITE, or LABRADOR FELSPAR, a mineral found on the coast of Labrador, and also in some parts of Europe. It is a variety of opaline felspar, distinguished by its reflecting very beautiful colours, according to the direction in which the light falls on it.

LANGUEN'TE [Ital.], a musical term, signifying that the passage is to be performed softly, or languishingly.

LIG'NIN, the fibrous portion of wood freed by digestion in water, alcohol, ether, hydrochloric acid, alkaline ley, and chlorine, from everything which these re-agents are capable of taking up.

LITHOG'LYPHITE, a fossil which has the appearance of being engraved or shaped by art.

LONDON CLAY (the *Calcaire grossier* of the French), a bluish clay lying immediately over the plastic clay and sand. It belongs to the *eocene* period, and abounds with fossil remains, especially of reptiles, fish, and testacea.

LUCIM'ETER, an apparatus for measuring the intensity of light proceeding from different bodies.

MACROM'ETER, a mathematical instrument contrived to measure inaccessible objects, by means of two reflectors on a common sextant.

MAR'SUPITE, a genus of Crenoidea found in the chalk of Sussex, Wiltshire, and Yorkshire, and bearing some resemblance in shape to a purse.

MAS'SICOT, the yellow oxide of lead. It is prepared by calcination of white lead; and by further calcination it becomes *minium*, or red lead.

MECHLO'IC ACID, an acid formed by

passing a current of chlorine over meconine infusion.

MECON'IC ACID, an acid obtained from *meconium* (opium). It crystallizes in white transparent scales, and is converted into oxalic acid by dilute nitric acid.

MEG'ASCOPE, an optical instrument for the examination of bodies of large dimensions.

MEL'ANITE, the black garnet; a mineral of a velvety black colour, found in the basalt of Bohemia, and in a rock at Frescati, near Rome.

MEMBRANOL'OGY, that branch of anatomy which treats of the membranes of the body.

MO'LECULES, the smallest particles into which a mass can be conceived to be divided. They are either *integrant* or *constituent;* the former being the smallest particle into which a simple body can be conceived to be divided, or into which a compound body can, without being resolved into its elements; the latter are the molecules of each element which form an integrant molecule of a compound.

MONOPOL'YLOGUE, an entertainment in which a single performer sustains many characters.

MONOTHAL'MOUS, in conchology, one chambered, *i. e.* when the chamber of the shell is not divided by partitions.

MONOTHE'ISM, the doctrine or belief of the existence of one god only, opposed to *polytheism*, or plurality of gods.

MORA'INE, the stony detritus found at the bases of glaciers in Switzerland.

MU'TULE, a projecting ornament of the Doric cornice, which occupies the place of the modillion in the other orders, and is signed to represent the ends of rafters.

MY'RICINE, the ingredient of wax which remains after digestion in alcohol.

MYROX'YLON, the balsam tree of Tolu (*Myroxylon peruiferum*), which affords the Peruvian balsam. There are three sorts of the balsam, that of incision, the dry balsam, and the balsam of lotion.

NOSOL'OGY, a classification of diseases, with names and definitions, according to the distinctive character of each class, order, genus, and species.

NOS'TALGY, a vehement desire to return to one's native country, attended with melancholy, want of appetite, and other symptoms indicative of the restless and unhappy state of mind of the individual.

NOS'TOC, a vegetable jelly of a greenish colour, frequently seen on sandy soils in summer, immediately after rain. It is vernacularly named *witches' butter*.

NUL'LAH, the name given in India to a natural canal, or small branch of a river.

OAST, a kiln for drying hops.

OLIV'INITE, an ore of copper of an olive-green colour. It is a hydrated phosphate of copper, occurring with quartz, in micaceous clay-slate.

OMOC'OTYLE, the cavity in the extremity of the neck of the scapula, in which the head of the humerus is articulated.

OPHICLEI'DE, a powerful bass wind instrument (of modern introduction) in a "brass band."

OR'GANZINE, a description of silk usually imported from Italy into this country.

ORNITH'OLITE, a fossil bird. The name is also applied to stones of various colours, bearing the figure of birds.

OXY'OPHY, the faculty of seeing more acutely than is usual, from a preternatural sensibility of the retina.

PALÆOG'RAPHY, the art and practice of describing ancient manuscripts, inscriptions, &c.

PALÆONTOL'OGY, the study of fossil remains, whether of animal or vegetable origin.

PALM-WINE, a liquor obtained in the East Indies by the incision of a species of the palm. It is there called *toddy*.

PAL'NINE, a white substance somewhat resembling wax when first obtained, but which hardens by being kept, and assumes a resinous appearance. It dissolves in alcohol and ether, and saponifies with potash ley.

PANOPHO'BIA, that kind of melancholy which is chiefly characterized by groundless fears.

PANSTER'EORA'MA, the model of any town or country in cork, wood, plaister, or any other material.

PANTECH'NICON, a repository or warehouse where every kind of workmanship is exposed for sale.

PARACROS'TIC, a poetical composition in which it is necessary that the first verse should contain in order all the letters with which the succeeding verses commence.

PAS'SIM, a word of reference in books, signifying here and there; throughout; in many different places.

PASTIC'CIO [Ital.], in music, a word used to denote an opera composed of detached airs, by different composers, occasionally introduced.

PEM'PHIGUS, an eruption, consisting of vesicles of various sizes, and very generally attended with fever.

PENDEN'TE LI'TE [Lat.], during the progress of the suit; while the suit is undetermined.

PENT-ROOF, a roof of any building or shed formed like an inclined plane, the slope being all on one side.

PERACU'TE, very acute; applied to diseases when they are very severe.

PET'ROLINE an unctuous substance obtained from the petroleum of Rangoon, or from the tar obtained by the distillation of various productions, both animal and vegetable, but especially the tar of the beech tree.

PIS'IFORM, granular iron-ore is called *pisiform* iron-ore, from its containing small rounded masses like peas in size.

PISTILLIF'EROUS, bearing pistils; a term applied to flowers or florets, which contain one or more pistils, but no stamens.

PITCH'BLENDE, a compound of the oxides of uranium and iron.

PIZZICA'TO [Ital.], a musical term signifying that the strings of the violin must be pinched with the fingers.

PLAS'MA, a grass-green variety of rhombohedral quartz, occurring in beds with common chalcedony. It was formerly used for ornamental purposes, but is now in little esteem.

PLESIOMOR'PHISM, the state of crystallized bodies, where the forms are nearly identical.

PLI'OCENE, in geology, the name given by Mr. Lyell to two of his four divisions of the tertiary strata, each being characterized by the proportion of recent fossils which it contains. The *newer pliocene*, the latest of the four, contains from 90 to 95 per cent.; while the *older pliocene* contains only from 30 to 35 per cent. [See EOCENE.]

PŒCILIT'IC, a geological term applied by M. Brogniert to the new red sandstone group of rocks; and, by Mr. Conybeare, to the entire group of coal formation and the lias.

POLYM'NITE, a stone naturally marked with dendrites and black lines, disposed so as to represent rivers, ponds, and marshes.

POL'YSCOPE, an optical instrument, consisting of a plano-convex lens, the convex surface of which is subdivided into several *facets*.

POL'YSTYLE, a building surrounded by numerous columns, so that they cannot be readily counted at first view.

PUL'VINATED, an architectural term, expressive of a swelling in any portion of an order, as the frieze of the Ionic order, for example.

PYRA''CIDS. New acids are generated by the process of decomposition which several vegetable acids undergo when distilled, and they are then distinguished by the name of *pyracids*. Thus, gallic acid yields *pyrogallic acid;* tartaric acid yields *pyrotartaric acid*, &c.

PY'ROPHANE, a mineral which in its natural state is opaque, but by means of heat is rendered transparent.

QUAS'SINE or QUAS'SITE, the bitter extract of quassia, the solution of which is colourless and intensely bitter. It crystallizes in very small white prisms.

RAILWAY REGULATOR, a most ingenious and useful application of mechanical contrivance for the accomplishment of the object indicated by its title. It consists of a dial about five feet in diameter, upon the upper half of which is a series of numbers, showing the distances of each station along the line of railway, the number of hours occupied by every train in both directions between each station, and the several stations and stopping-places between the extreme termini. In the centre is a clock dial, by which the departure and arrival of every description of train can be ascertained at a glance. The several trains are indicated by elongated hands, which are worked by a movement constructed according to the speed required, and attached to the works of the clock. In the Railway Regulator, the goods train travels at the rate of 12½ miles an hour, the passenger train at 25 miles, and the express train at 50 miles an hour. The construction of this useful apparatus is simple, and cannot get out of order. It can be adapted to suit any required speed, and by shifting the hands the hours of departure can be varied as circumstances may demand. Its accuracy is perfect, and, without reference or limitation to the number of departures, it shows at once the position of every train upon the entire length of line; and when any material alterations are made in the hours of starting, it prevents all possible confusion and risk of accidents from this cause, by showing the places at which arrangements require to be made for express and quick trains passing slow ones.—*Times*.

RAILWAY WHISTLE. Mr. A. Douall, C. E., has patented a new Whistle for Railway and Steam-boat Signals, which is very successful in point of intensity of tone; besides having the advantage of being able to give a variety of notes, on which a code of audible signals can be made, which it will be next to impossible to misunderstand. It consists of a close vessel or receiver, into which atmospheric air is compressed by air-pumps, to which motion may be given by hand, or by connection being made with any moving parts of the carriage, and disconnected when the air is sufficiently compressed, as shown by a safety-valve attached. The compressed air is allowed to pass through the whistle by the action of a lever, wheel, and axle, or any other known means; and, by having two whistles of widely distinct notes, a large number of different combinations of sounds may be made, from which a most perfect code of signals can be compiled. Air highly compressed gives a far more clear, loud, and distinct tone than steam, or any other elastic vapour.

RE'CENT, a geological term applied to whatever is of a date posterior to the introduction of man, all formations since that period being so termed. The word is also used in natural history, in contradistinction to *extinct*.

RECIP'ROCATING SYSTEM, a term used to denote the method of propelling railway carriages by means of stationary engines placed at intervals along the line, instead of locomotive ones attached to the train.

RED LEAD, *minium:* a red oxide of lead, prepared by exposing massicot for about 48 hours to the flame of a reverbatory furnace.

RED SAN'DERS. The wood of a tree growing in Ceylon and other parts of India (the *Pterocarpus santalinus* of botanists). It is of a garnet-red colour, and extremely hard. The old wood only is employed as a dye-stuff, and the colouring matter which it yields is by chemists known as *santaline*.

RED SNOW, a minute fungus abundant in the arctic regions, which gives the colour to the red snow; its botanical name is *uredo nivalis*.

RE'GIUM DO'NUM (Lat. *a royal gift*), an annual grant of public money in aid of the clergy of certain sects of dissenters.

RES'PIRATOR, an instrument made of a series of extremely thin perforated metal plates, fitted to cover the mouth, over which it is fastened by bandages; its object being to heat the *inspired air* before entering the lungs, by retaining for a time that of the *expired* air. Persons afflicted with asthmatic complaints, or diseased lungs from other causes, have often received great benefit from its use.

RHE'INE (sometimes termed RAPHON'-

TICINE), a substance obtained from rhubarb (*rheum*), by treating it with ether. It is obtained in minute crystalline grains, of a deep yellow colour, but having no taste or smell; and is remarkable as a solvent of iron.

RIDOTTO [Ital.], a favourite public amusement in Italy, consisting of music and dancing.

RIMOSE, a zoological term, to denote that the surface of any part possesses numerous minute narrow excavations, running into each other.

ROMAIC, the language of modern Greece.

ROMANESQUE, in painting and the fine arts generally: appertaining to fable or romance; when used in reference to languages, it means the common dialect of Languedoc, and other parts in the south of France.

ROSAIC ACID, a peculiar acid of a rose colour, deposited from the urine of persons labouring under gout and inflammatory fevers.

ROSE-ENGINE, an appendage to the turning-lathe, by which a surface of wood or metal is engraved with a variety of curve lines.

ROSTRATE, a term applied to parts of shells, &c., which have a beak-like form.

RUST. We copy the following from the "Year Book of Facts:"—All the common metals, except tin, rust; they become duller and duller up to a certain degree, lose gradually their lustre, and then the process goes no further. Instead of this rusting being a destroyer of the metal, it is a preserver; for, even in the case of iron, which rusts quickly as compared with other metals, if it be dipped into tin, it comes out coated with it, and it is preserved beautifully. If iron be exposed for a couple of hours to the action of water, the iron becomes quite corroded; but when tinned, the iron is protected, and the tin itself appears unaffected. How is it that this metal can protect itself, and the iron that is under it? It is simply owing to the substance formed on the surface by the attraction of oxygen, which is so adherent to the metal beneath. It gives a protection which no varnish, or any kind of application, can afford. Take a copper or a tin plate, they are both protected in their metallic state by a thin coat formed in the first instance of oxide. It is only because this coat is so exceedingly compact, close, and adherent, that it passes for nothing—a mere film of tarnish. You think you see, or touch, a piece of tin; you cannot detect the film, except by close examination. We know it is there, but it is only by optical phenomena that we can measure its thickness. It seems clean and beautiful, but if you rub it off, you give the metal beneath a new character; the beautiful lustre, however, passes off the first moment up to a certain point. The body formed by the combination of oxygen with iron is different. The oxide does not adhere to the metal beneath; it forms upon it little spots, or porous tumuli. It is not an investing varnish, but the process goes on through the pores of the rust, especially if the metal be placed in a damp atmosphere. This is the reason why we find a difference between copper, iron, tin, and lead, when used for roofs, or other external purposes. The iron alone is eaten into and destroyed, by this want of adhesion in its rust to the surface of the metal. "It is curious to observe, in some cases, how tin, a metal, having a slight attraction for oxygen, protects other metals from oxidation. In Canada, tin plate is used for the roofs of houses; I am told that you are dazzled by the lustre of the setting sun upon the roofs; and there, although it is exposed to the atmosphere year after year, it does not decay, because the superficial coat of oxide protects the tin and iron beneath."—*Faraday*.

SACCHAROID, a term applied to rocks which have a texture resembling that of loaf sugar.

SEISMOMETER, an instrument for measuring the shock of earthquakes and other violent concussions.

SEMIPALMATE, in zoology, when the toes are connected by a web extending only half their length.

SERAPHINE, a musical wind instrument, or kind of chamber organ.

SEWING MACHINE. The American papers mention a machine invented by one Elias Howe, which sews beautiful and strong seams in cloth with great rapidity. The following claims are in the words of the patentee:—The lifting of the thread that passes through the needle eye by the lifting rod, for the purpose of forming a loop of loose thread that is to be subsequently drawn in by the passage of the shuttle; said lifting rod being furnished with a lifting pin, and governed in its motions by the guide pieces and other devices. The holding of the thread that is given out by the shuttle so as to prevent its unwinding from the shuttle bobbin, after the shuttle has passed through the loop; said thread being held by means of the lever, or clipping piece. The manner of arranging and combining the small lever, with the sliding box in combination with the spring piece, for the purpose of tightening the stitch as the needle is retracted. The holding of the cloth to be sewn by the use of a baster plate, furnished with points for that purpose, and with holes enabling it to operate as a rack, thereby carrying the cloth forward, and dispensing altogether with the necessity of basting the parts together.—*Mech. Mag.*

SILHOUETTE, in the fine arts, the representation of an object in a black colour, with the prominent features lightened, and the shadows indicated by being touched with gum.

SOIREE [Fr.], an evening party of ladies and gentlemen, at which occasional addresses are delivered on miscellaneous subjects by some of the company, refreshments being provided, and other means of entertainment offered by the host.

SOSTENUTO [Ital.], in music, a term used to denote the unbroken continuance of sounds.

SPONGIOLE, in vegetable physiology, organs called *spongioles*, from their being composed of common cellular spongy tissue,

are situated at the end of the root, and by imbibing the fluids which are in contact with them, enable plants to absorb the nourishment and moisture necessary to their growth.

STA'TUS QUO, that condition between two or more belligerents, who have entered into a treaty by which they are restored to the same state as before the war, with regard to their territories, fortresses, &c.

SYCEE SILVER, a silver currency among the Chinese.

SYCO'NIA, an irruption of inflamed tubercles, occurring on the bearded portion of the face and on the scalp, usually clustered together in irregular patches.

SYN'DIC, an officer entrusted with the affairs of a city or community. Most universities, and almost all the companies of Paris, have their *syndics*.

TEL'ESCOPE. We give the following from the *Mechanics' Magazine*. The Rosse Telescope. The capacity of this instrument is wonderful. Such is its power that if a star of the first magnitude were removed to such a distance that its light would be three millions of years in reaching us, this telescope would, nevertheless, show it to the human eye. Is it to be wondered at, then, that with such an instrument grand discoveries should be made? It has been pointed to the heavens; and, although in the beginning only of its career, it has already accomplished mighty things. There are nebulous spots in the heavens which have baffled all the instruments hitherto constructed, but this telescope resolves their true character completely. Among the wonderful objects which have been subject to its scrutiny, is the nebula in the constellation Orion. I have had an opportunity to examine it. It is one of the most curious objects in the whole heavens. It is not round, and it throws off furious lights. From the time of Herschel it has been subjected to the examination of the most powerful instruments—but it grew more and more mysterious and diverse in its character. When Lord Rosse's great telescope was directed to its examination, it for a long time resisted its power. He found it required patient examination—night after night and month after month. At length a pure atmosphere gave him the resolution of its constitution; and the stars of which it is composed burst upon the sight of man for the first time.

TENAC'ULUM, a surgical instrument, formed with a hook at one end, for taking up and drawing out the mouths of bleeding arteries, to secure them by ligaments.

TER'MINUS, pl. Ter'mini, in architecture, columns having the figure of a head for a capital, either of a man, woman, or satyr, and ending below in a sort of sheath or scabbard, are called *Termini*. The word *Terminus* is now universally used to denote the limit of a railway.

TES'SULAR, a term applied to a system of crystalisation in which the form is determined and unalterable.

TETRADAC'TYLOUS, having four toes.

THAU'MATROPE, an optical device to exhibit the *persistence of vision*. The principle is well exemplified by rapidly whirling round a burning stick, which apparently produces a circle of fire.

TIB'IA, in anatomy, the largest bone of the leg.

TON'QUIN BEAN, the fruit of the *Dipterix odorata*, a shrubby plant of Guiana. It has a peculiarly agreeable odour, and is used in the scenting of snuff.

TRI'COLOR, the national French banner of three colours (blue, white, and red), adopted as the emblem of the first revolution, and now again unfurled.

UN'DULATORY THEORY, in optics, the theory according to which light is transmitted by the undulations of an elastic medium.

VERBE'NA, an extensive genus of herbaceous plants.

VERDE-ANTIQUE, in mineralogy. white crystallised marble and serpentine, irregularly mingled. It takes a fine polish, and is used for various ornamental purposes.

VIL'LOSE, or VIL'LOUS, an anatomical term used to designate a velvet-like arrangement of fibres or vessels, as the *villose* coat of the intestines; and in botany, to parts covered with a shaggy pubescence.

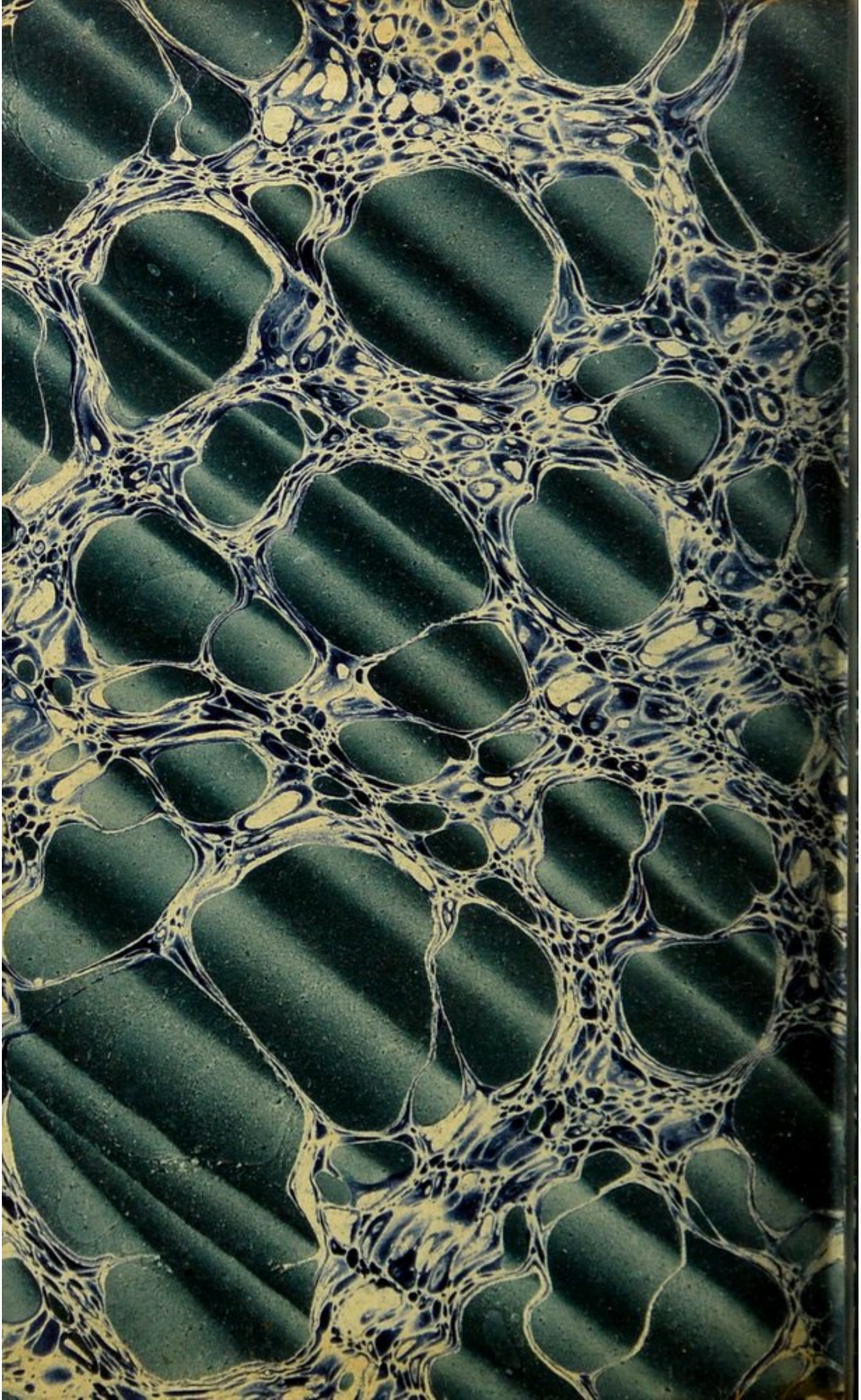
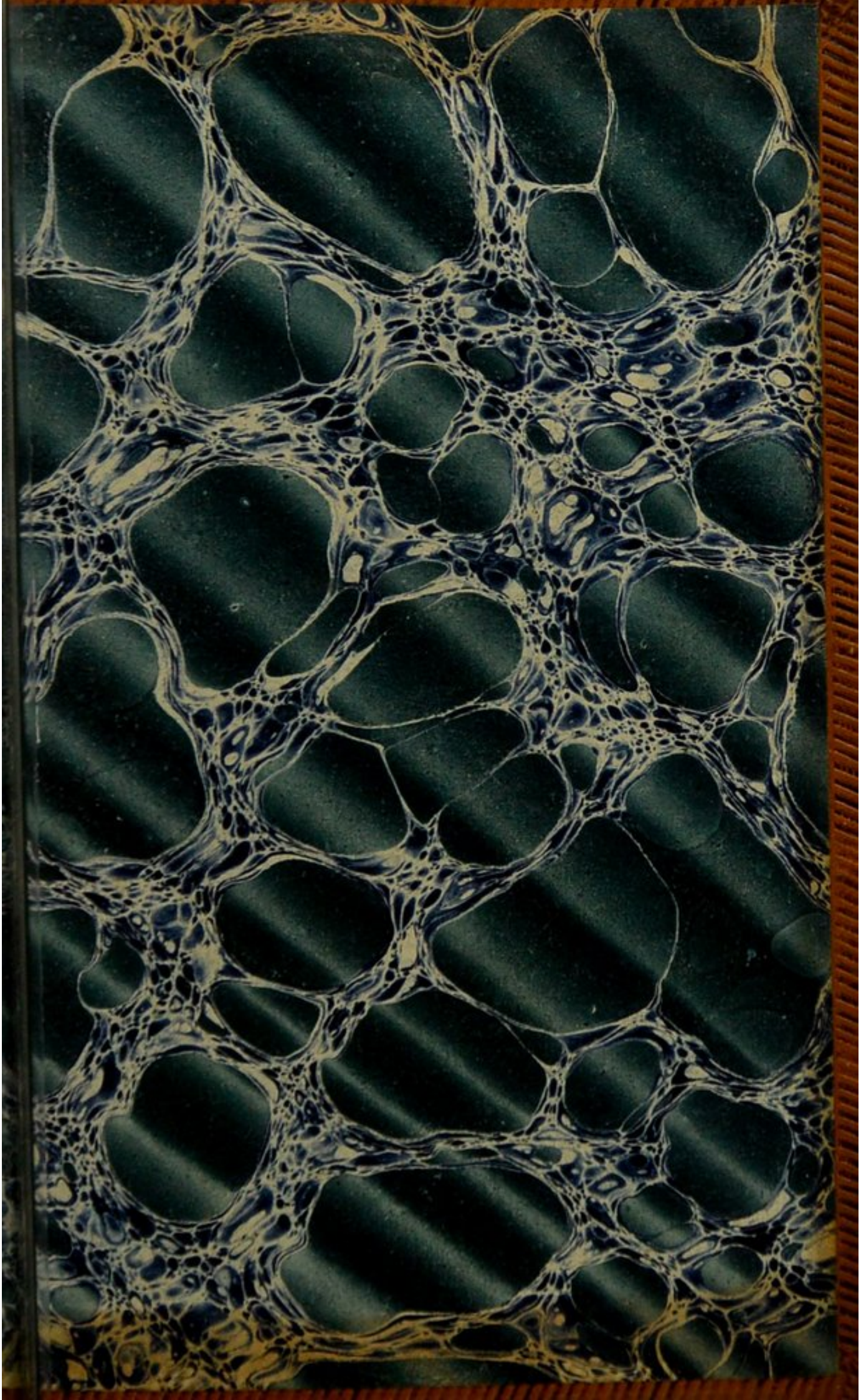
VITIL'IGO, a cutaneous disease, or kind of leprosy, in which the skin has a white and shining appearance.

VIT'REO-ELEC'TRIC, in a state of positive electricity, such as is exhibited by rubbing glass.

VOLTAM'ETER, an instrument for measuring the amount of electricity passing in a current through it.

WEALD-CLAY, in geology, a tenacious blue clay, which forms the sub-soil of the wealds of Kent and Sussex. In it are contained subordinate beds of sandstone and shelly limestone, with layers of septaria of argillaceous iron-stone. The *Wealden strata* include the Weald-clay, the Hastings stands, and the Purbeck beds.

ZOON'IC ACID, a name given by Berthollet to acetic acid combined with animal matter, obtained by distilling any animal substance.

THE END.

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